I-55/75/26
Multimodal Corridor Study
▶Technical Memorandum 1: Corridor Data and Information Inventory

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TN TDOT Department of Transportation

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I-55/75/26 Multimodal Corridor Study

Technical Memorandum 1: Corridor Data and Information Inventory

1. Introduction

Safe, efficient, and equitable multimodal surface transportation infrastructure is critical to promoting the wellbeing and economic vitality of the people of Tennessee. The state's freeways form the backbone of that transportation system, complemented by state highways, local roads, airports, railroads, transit systems, bicycle and pedestrian facilities, and waterborne navigation facilities. Tennessee's interstate highways carry about 30% of all vehicle miles traveled in the state, and 80% of all truck miles[1], making them the key component of the roadway system, facilitating the movement of people and goods across the state and across the country. Developing a multimodal transportation system that meets the changing needs of Tennessee's residents, businesses, and visitors will support the state's growth and provide a range of safe transportation options for everyone.

The purpose of the I-55/75/26 Multimodal Corridor Study is to evaluate potential transportation improvements to address existing and emerging issues in the system. The analysis is centered on study areas surrounding four Interstate corridors: I-55 in southwestern Tennessee, I-155 in northwestern Tennessee, I-75 in the east-central part of the state, and I-26 in eastern Tennessee. Together, these corridors represent more than 200 miles of freeway traveling through urban and rural counties, supported by a robust network of state and local roadways, rail, air, transit, and non-motorized transportation facilities.

The study will consider innovative, long-range approaches to multimodal issues and opportunities in these corridors. Solutions will be developed to address traffic and congestion, operations and safety, expanded transportation choice, and the ways in which the transportation system supports economic growth, freight movement and access to employment.

The study involves four core activities:

- Gathering and evaluating transportation, demographic, economic, and other planning data.
- Assessing existing and expected future system deficiencies to develop goals and performance measures for each corridor.
- Developing and evaluating feasible multimodal solutions to meet those goals.
- Prioritizing actions to implement those solutions.

The study includes multiple opportunities for stakeholder involvement, including surveys, regional meetings, interactive online mapping and the guidance of a project advisory committee made up of representatives from each corridor's study area.

This report documents the data gathered to support study analysis. It includes information about existing transportation facilities and their operations, corridor demographic and economic conditions (and forecasted changes in those conditions), and planned improvement projects. Where applicable, it provides snapshots of existing conditions across these factors.

Four interstate corridors - I-55, I-155, I-75 and I-26 - are included in the study.

1- TDOT, Interstate 65 Multimodal Corridor Study, Technical Memorandum 1, 2016

I-55 Corridor

▶Corridor Data and Information Inventory

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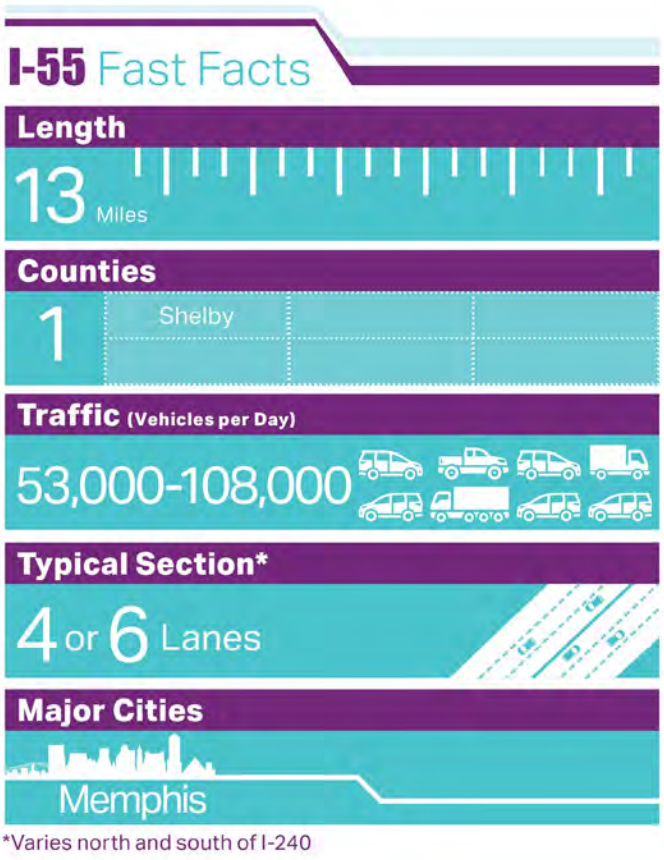
I-55 Corridor

1. Introduction

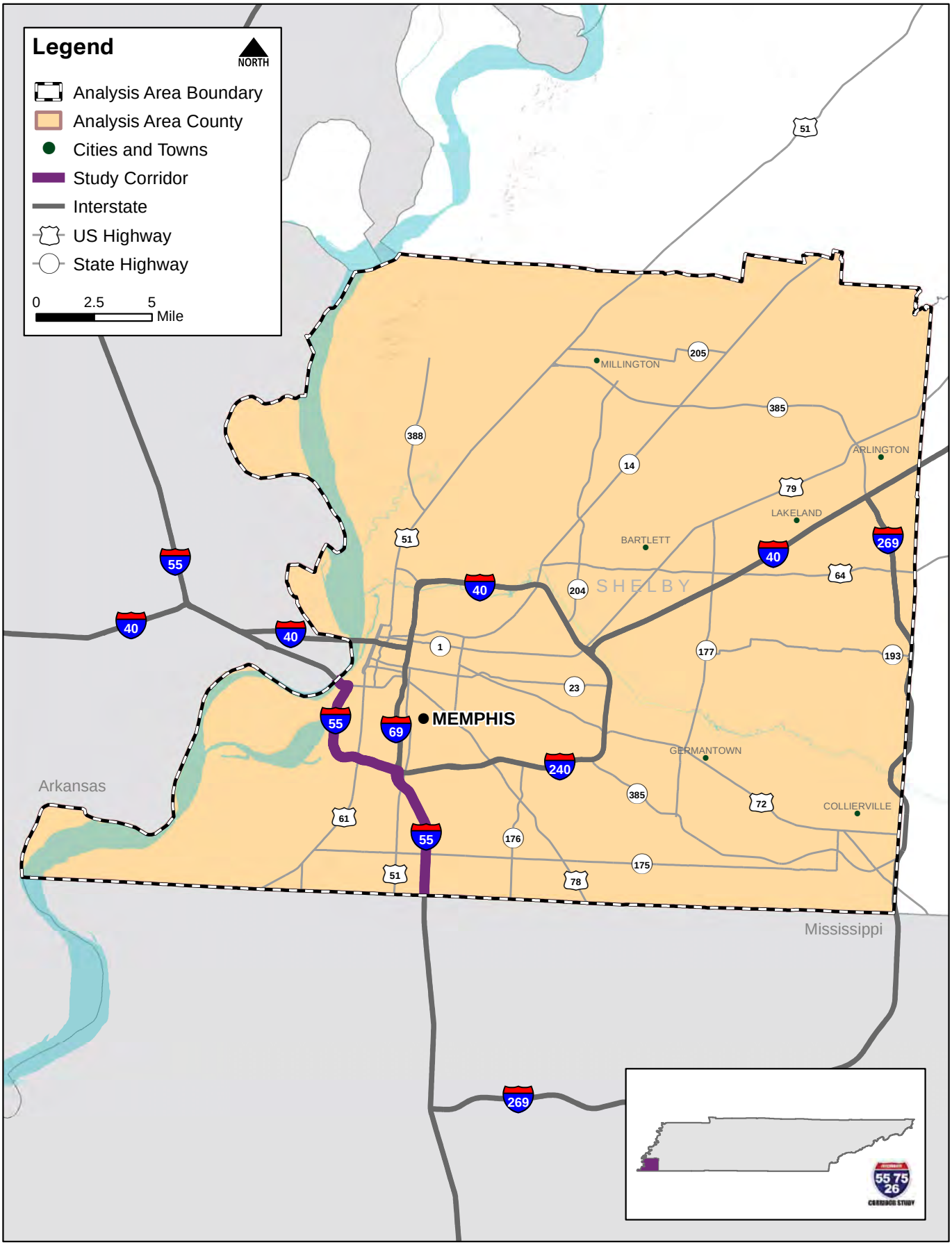
The I-55 Corridor Data and Information Inventory describes data used to develop and evaluate multimodal transportation improvement options for the I-55 corridor in southwestern Tennessee. This corridor was studied as part of a larger corridor study that included I-155, I-75 and I-26 in addition to I-55. Interstate 55 is a major north-south route connecting the Gulf of Mexico to the Great Lakes in the central United States. The length of the Tennessee portion of the I-55 corridor is approximately 13 miles and includes I-55 from the Mississippi/Tennessee border to the Arkansas/Tennessee border within the city of Memphis. The project analysis area is shown in Figure 1-1; it includes all of Shelby County.

The main purpose of this study is to identify existing and emerging deficiencies along the I-55 corridor and to evaluate and prioritize improvements to address those deficiencies. The study will consider innovative approaches to explore the multimodal issues and opportunities available to the Tennessee Department of Transportation (TDOT) to address capacity and congestion, enhance operational efficiency, improve safety and security, expand transportation choices, and support economic growth and competitiveness. This memo documents the data gathered to support study analysis. It includes information about existing transportation facilities and their operations, corridor demographic and economic conditions (and forecasted changes in those conditions), and planned improvement projects. Where applicable, it provides snapshots of existing conditions across these factors.



The I-55 corridor is being studied as part of a larger corridor study that also includes I-155, I-75, and I-26.

Figure 1-1. I-55 Corridor Study Area



2. Previous and Current Plans and Studies

Many agencies have conducted studies and developed a variety of plans for the I-55 study area. These studies focus on all modes of transportation and various levels of infrastructure, from statewide and regional to community-specific. Key studies, plans, and programs were reviewed to develop an understanding of the corridor and the needs and opportunities that have been previously identified. These are summarized in Table 2-1. The TDOT State Transportation Improvement Program (STIP), Memphis MPO's Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP) were reviewed to identify planned projects in the vicinity of the I-55 study corridor. See Section 4.2 for a summary of these projects.

TDOT Plans

1. Statewide Multimodal Freight Plan (2018)
2. State Transportation Improvement Program, 2017-2020 (2016)
3. Region 4 Incident Management Plan (2016)
4. 25-Year Long Range Transportation Policy Plan (2015)
5. TDOT Extreme Weather Report (2015)
6. Strategic Highway Safety Plan (2014)
7. Mississippi River Crossing Feasibility and Location Study (2006)

Memphis MPO Plans

1. Regional Freight Plan (2017)
2. 2040 Regional Transportation Plan (2016)
3. 2017-2020 Transportation Improvement Program (2016)
4. Bus Stop Design and Accessibility Guidelines (2016)
5. Coordinated Public Transit - Human Services Transportation Plan (CPT-HSTP) (2016)
6. Regional ITS Architecture & Deployment Plan (2014)
7. Memphis Area Regional Bicycle and Pedestrian Plan (2014)
8. 2015 Land Use Model Development Report (2013)
9. Poplar Southern Corridor Study Final Report (2010)

Other Plans

1. Shelby County Office of Sustainability Regional Resilience Plan (in progress)
2. Memphis 3.0 Comprehensive Plan (in progress)
3. Transit Vision Plan
4. Port of Memphis Master Plan (soon to be released)
5. Midsouth Regional Greenprint
6. Memphis Aerotropolis Airport City Master Plan (2014)
7. Memphis Area Transit Authority (MATA) Short Range Transit Plan (SRTP) (2012)
8. Memphis Freight Infrastructure Plan (2009)

3. Existing Data and Information

This section summarizes the transportation, demographic, land use, economic, and other data compiled for this study. When applicable, it presents snapshots of existing conditions in the I-55 corridor.

3.1 Transportation Capacity, Travel Demand, and Congestion

Available existing data and information were compiled to evaluate current and projected roadway capacity, demand, and congestion conditions in the I-55 study corridor.

Existing Highway Network

Highway Performance Monitoring System (HPMS) data was obtained from TDOT. The data included road names, cardinal direction headings, functional class, ownership, and traffic volumes. TDOT also provided Transearch data, which included highway and rail network geometrics, such as number of lanes and rail owner and classification. Intelligent Transportation Systems (ITS) facilities and resources were also provided by TDOT. In addition, the US Census 2010 Geographic Information System files for all streets in the study area were obtained to supplement local road information.

Existing Travel Volumes

Average annual daily traffic (AADT) volumes, truck traffic counts and American Transportation Research Institute (ATRI) origin-destination freight traffic volumes in the study area were provided by TDOT. 2017 AADT volumes along the I-55 corridor range from 53,180 vehicles per day near the Arkansas-Tennessee state line to 107,760 vehicles per day near the I-240 interchange. Traffic counts are available for other roadway facilities within the study area surrounding I-55. In 2017, truck percentages on I-55 in the study corridor ranged from 12% to 49% of all traffic. Details regarding freight movement in the study area are found in Section 3.5.

Existing Areas of Travel Demand Model Coverage

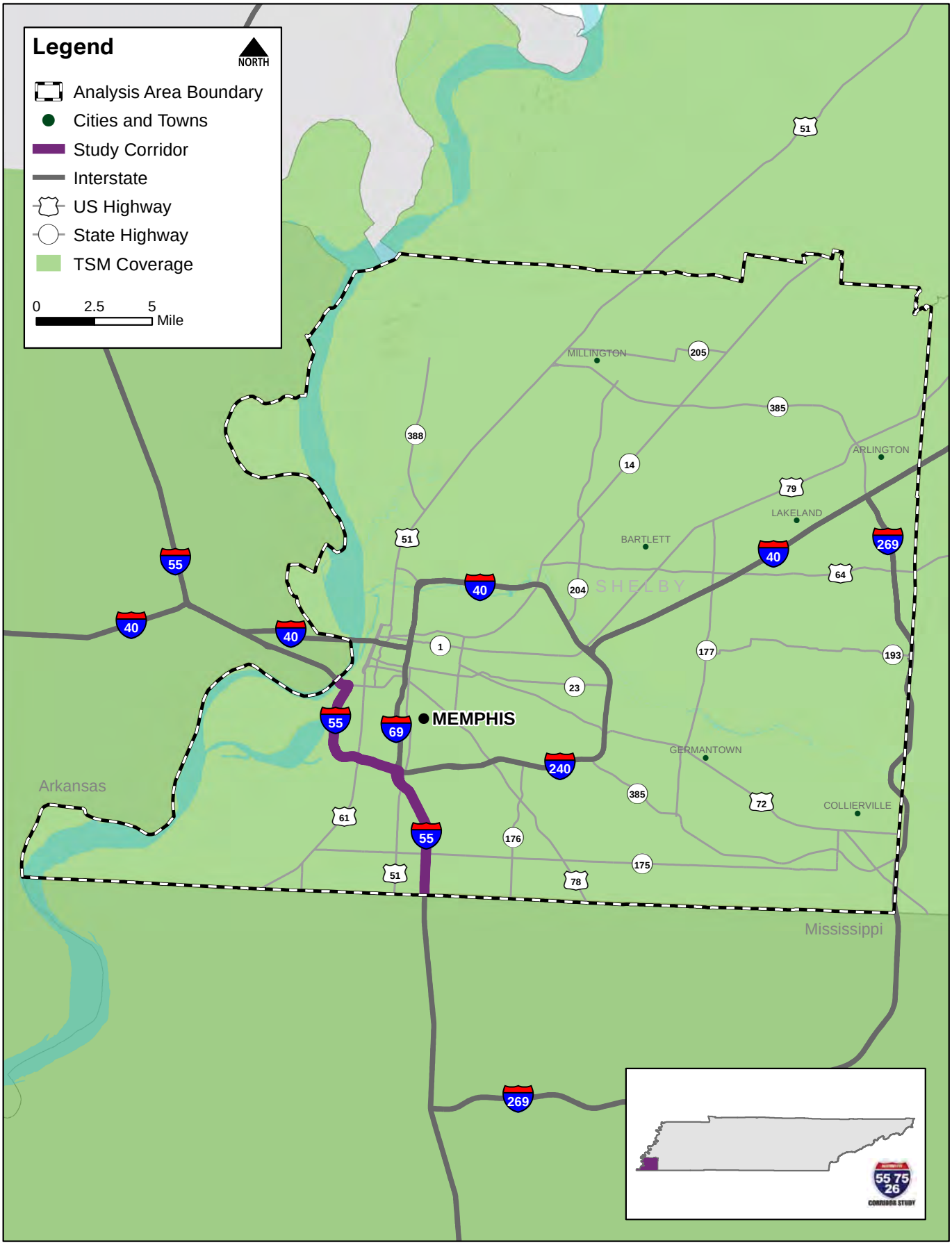
The I-55 study corridor is located within Shelby County and the Memphis Urban Area Metropolitan Planning Organization (MPO) coverage area. The Memphis MPO has developed a travel demand model to estimate future travel demand and traffic conditions in three counties: Shelby, Tipton, and Fayette. TDOT has also developed a statewide model that includes the areaas contained in the MPO regions. Based on similiar comparisons between the Tennessee Statewide Travel Demand Model (TSM) and the regional model outputs, TDOT and MPO staff agreed to utilize the TSM to analyze the existing and future travel demand within the study area. Figure 3-1 displays the TSM coverage for the study area.

For future year related tasks, the analysis will rely on the TDMs plus data from Air Sage, Transearch, Tennessee Roadway Information Management System (TRIMS), National Performance Management Research Data Set (NPMRDS), and HPMS. The Air Sage and Transearch data provide origin-destination traffic volumes for the study area. TRIMS is TDOT's transportation data platform, assembling over 30 years of highway transportation information, including highway data, traffic data, crash data, structure data, pavement data, railroad grade, and crossing data. NPRMDS provides vehicle probe-based speed and travel time for passenger cars and trucks in 5-minute increments on a daily basis. The HPMS is a national level highway information system that includes data on the extent, condition, performance, use, and operating characteristics of the nation's highways.

Based on existing traffic conditions, several areas of chronic congestion exist along the study corridor. These include the I-55/I-69/I-240 interchange area, and the segment of I-55 near the Arkansas-Tennessee state line. Both of these areas exhibit congestion during morning and evening peak travel periods.

2017 AADT volumes provided by TDOT

Figure 3-1. I-55 TSM Coverage Area



3.2. System Operations and Maintenance

Numerous jurisdictions have responsibilities related to transportation system operations in the I-55 corridor. This section describes the coordination among those jurisdictions and the tools available to them.

Jurisdictions and Coordination

Federal, state and local agencies work together to maintain and operate transportation systems. Operations and maintenance tasks include emergency management planning, facility maintenance, signage, markings, and inspections. Coordination of these efforts is undertaken by key agencies, including Tennessee state Regional Operations offices, Maintenance Policy Office, Office of Emergency Management, Environmental Compliance office, counties, and municipalities.

A regional operations office is located in each of Tennessee's four TDOT regions. For the I-55 corridor, the Regional Operation Office in Jackson is responsible for directing operations and maintenance activities, including highway maintenance and repair, bridge inspection and repair, traffic and highway pavement markings, materials and testing, highway beautification, traffic engineering, incident response, and intelligent transportation systems.

In addition to the regional operations office, local maintenance contracts are used on paved surfaces within urban jurisdictions. These contracts are created between TDOT and local jurisdictions, including counties and municipalities, detailing responsibilities for maintenance of state owned roads.

The Maintenance Policy Office at TDOT is responsible for developing and refining the procedural guidelines for field maintenance activities. The office coordinates special maintenance programs such as the Vegetation Management Program. The Maintenance Policy Office works in conjunction with the Environmental Compliance Office on municipal stormwater and other environmental issues. Finally, the Office of Emergency Management works with the Tennessee Emergency Management Agency (TEMA) on emergency preparedness.

ITS Features and Operations

Intelligent Transportation Systems provide information which improves transportation safety, operations, and mobility. TDOT's ITS program, SmartWay, utilizes cameras and sensors to monitor interstate corridors throughout Tennessee. SmartWay dynamic message signs provide traffic information and travel times to users. Components of the ITS SmartWay system include:

- Cameras that monitor freeways, providing improved incident management
- Radar and video detection that calculate travel times and monitor traffic flow
- Roadway traffic sensors that report traffic counts, speeds, and travel times
- Dynamic Message Signs (DMS) to communicate traffic information, travel times, and key messages to motorists
- Traffic Management Centers (TMCs) located in Memphis, Nashville, Chattanooga, and Knoxville
- HELP freeway service to reduce congestion by removing minor incidents quickly
- TN 511 provides traffic information and weather conditions by phone
- SmartWay App provides real-time traffic information
- Fiber-optic and wireless communications connecting all elements of the system

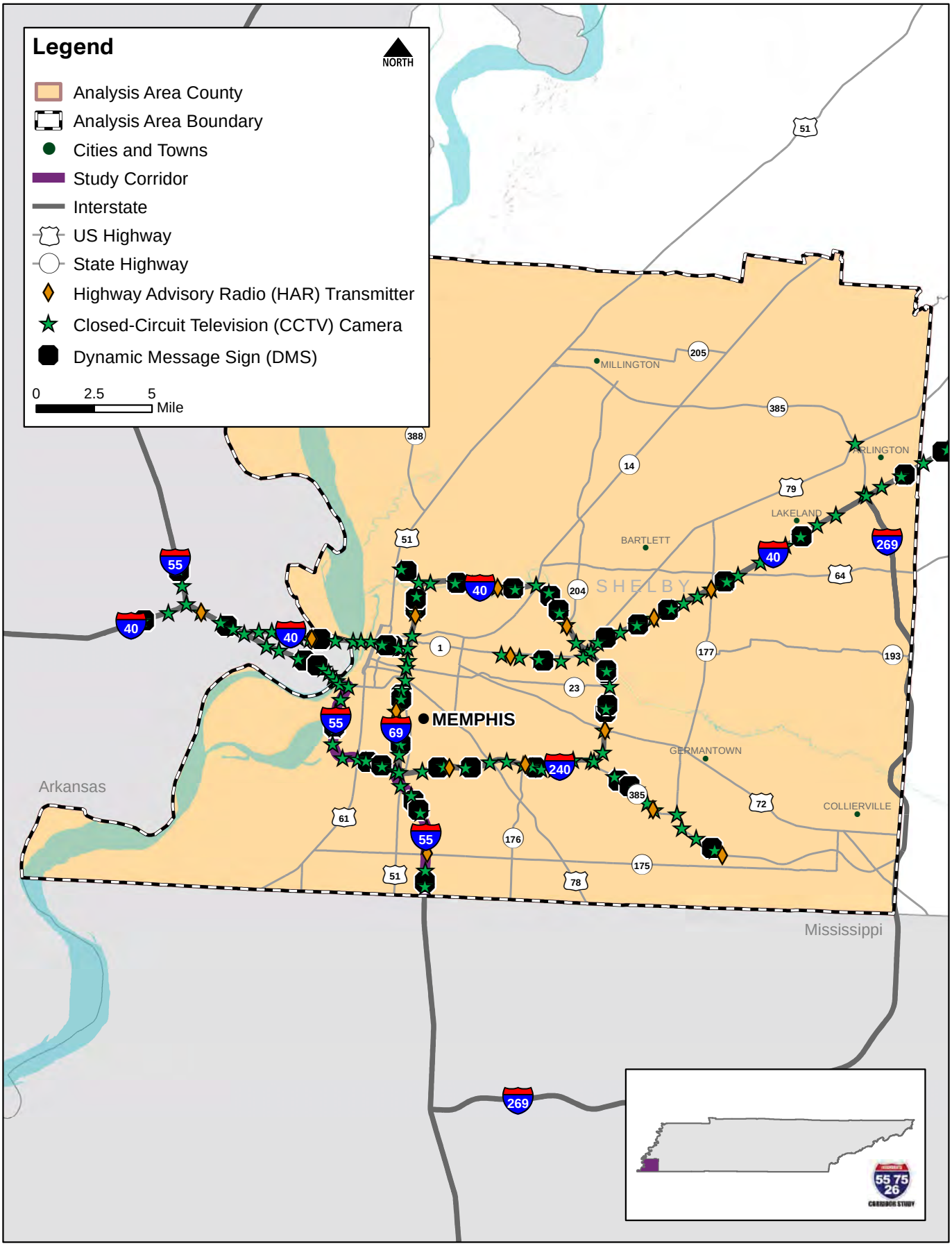
Table 3-1. ITS Resources – I-55

ITS Resource	Count
TMC Operators*	25
HELP Operators*	25
HELP Vehicles*	28
IT Technicians*	2
Closed Circuit Television (CCTV) Cameras	21
Speed Detectors	23
Dynamic Message Signs (DMS)	7
HIghway Advisory Radio (HAR) Transmitters	3
HAR Signs w/Beacons	7

*Applies to entire Memphis area, not just I-55

SmartWay technology can be found on several corridors in the Memphis metro area including along I-55. Currently, the I-55 corridor contains 21 cameras, 23 speed detectors, and 7 DMS. TDOT also operates HELP trucks on Tennessee's most heavily traveled highways including I-40, I-240, SR-385 and I-55 in Memphis to help reduce congestion, improve safety and assist motorists. The Memphis area has 25 total HELP trucks. The I-55 HELP service area runs from the Arkansas state line to the Mississippi state line. The current ITS system coverage of I-55 can be seen in Figure 3-2.

Figure 3-2. I-55 SmartWay Map



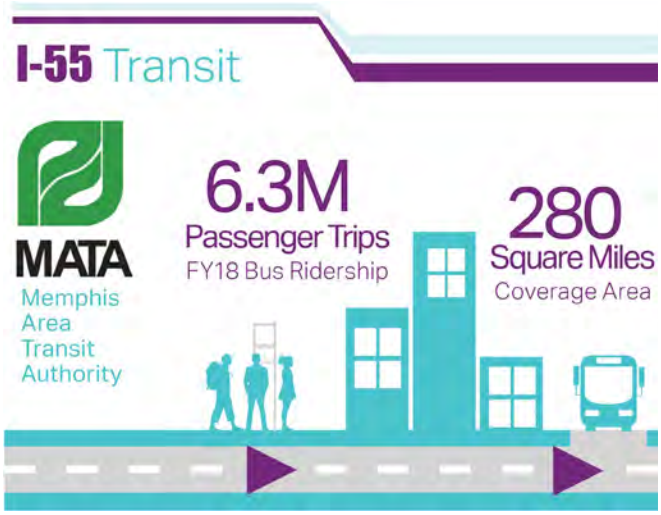
Picture Caption

3.3. Multimodal Facilities and Services

The Tennessee transportation system represents all modes of travel - including walking, biking, and transit services. Each mode plays a vital role in meeting mobility and access needs.

Public Transportation and Transportation Demand Management

The I-55 corridor study area follows the boundaries of Shelby County, which contains the city of Memphis and surrounding communities. Almost the entire study area is served with public transportation by the Memphis Area Transit Authority (MATA) (see Figure 3-3). MATA offers over 40 fixed bus routes, over 4,000 bus stops covering 280 square miles and seeing 6.3 million passenger trips per year. Bus fares are $1.75 per trip. Of the fixed bus routes, all run Monday through Saturday and some are available on Sundays. In addition to the fixed bus routes, MATA also offers a downtown trolley service seven days a week. Trolley fares are $1.00 per ride. Finally, in addition to the fixed route services, MATA offers an on-demand, paratransit service called MATA Plus. MATA Plus fares are $3.50 per ride for eligible participants.



MATA manages several park and ride lots throughout Shelby County. Figure 3-4 shows the three existing MATA park and ride lots, including one near I-55 at the American Way Transit Center serving airport users. According to the 2012 MATA short range transit plan, additional park and ride lots are under consideration.

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities exist throughout the State of Tennessee on a variety of scales, including signed bikeways, sidewalks, crosswalks, bicycle lanes, and regional bicycle and pedestrian plans.

Tennessee also has extensive Bicycle Level of Service (BLOS) maps. The BLOS maps include all state routes and rank each according to available shoulder width and amount of traffic. State routes with wider shoulders and lower traffic are given a level of service A, while those with high traffic and narrower shoulders receive lower grades.

Over thirty individual bicycle routes are planned across the entire state. These routes are planned along state routes, linking key resources and cities. Planned state route bicycle routes can be seen in Figure 3-5. While none of the state planned bicycle routes parallel the I-55 corridor, both the Memphis to Chattanooga route and the Memphis to Nashville route originate in Memphis within a few miles of the I-55 corridor.

MATA buses serve more than 4,000 bus stops throughout the Memphis area.

Figure 3-3. I-55 Transit Routes

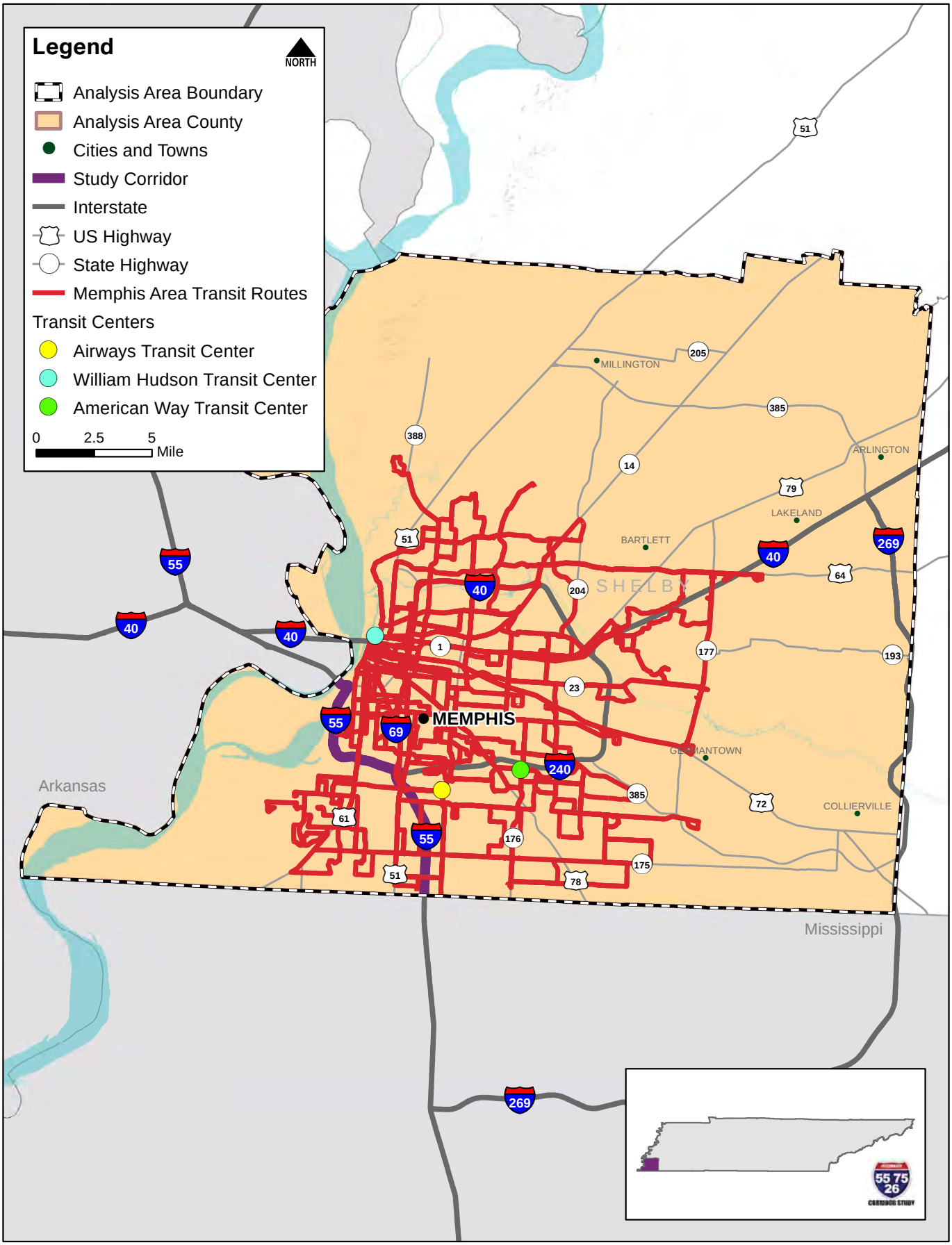


Figure 3-4. I-55 Park and Ride Lots

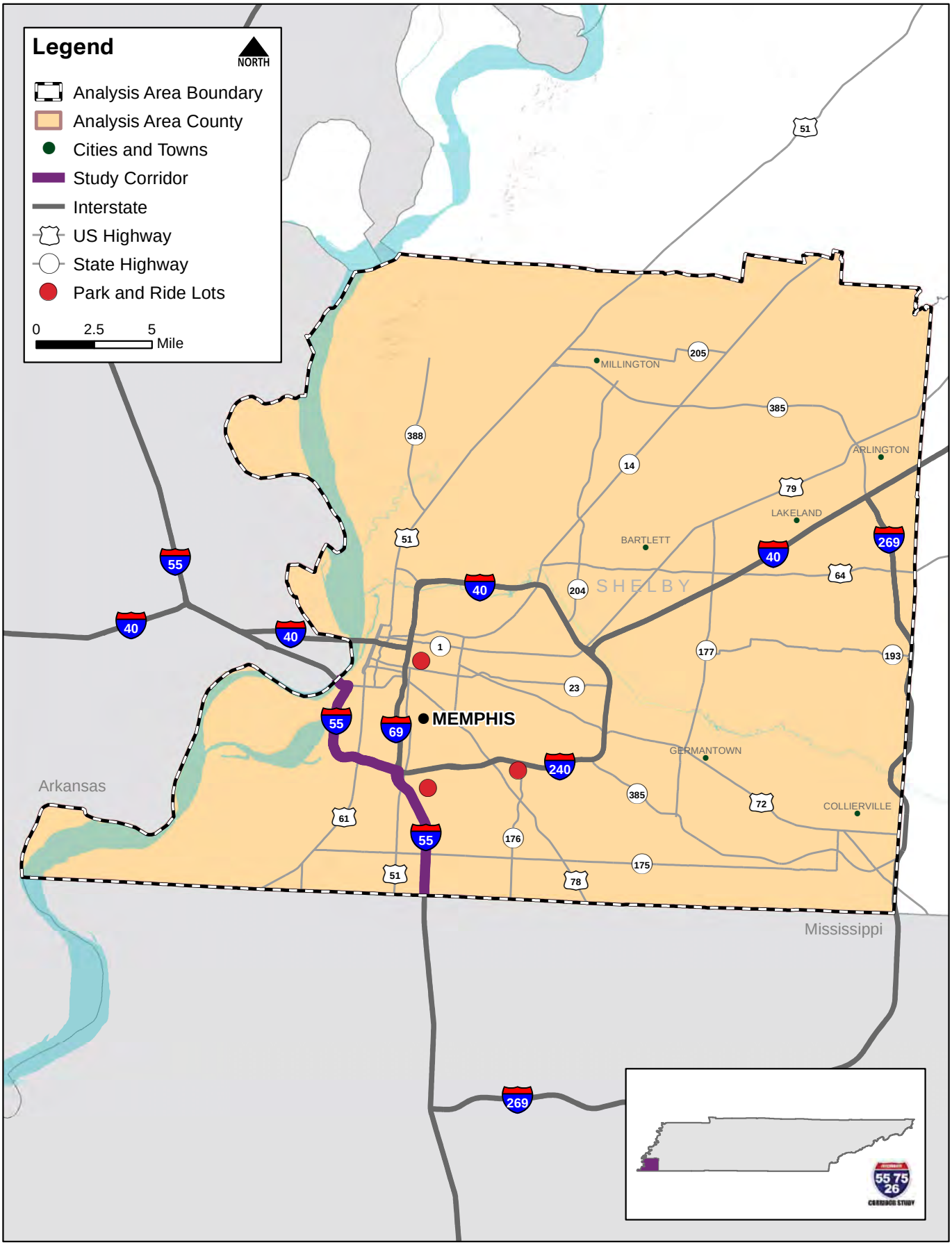
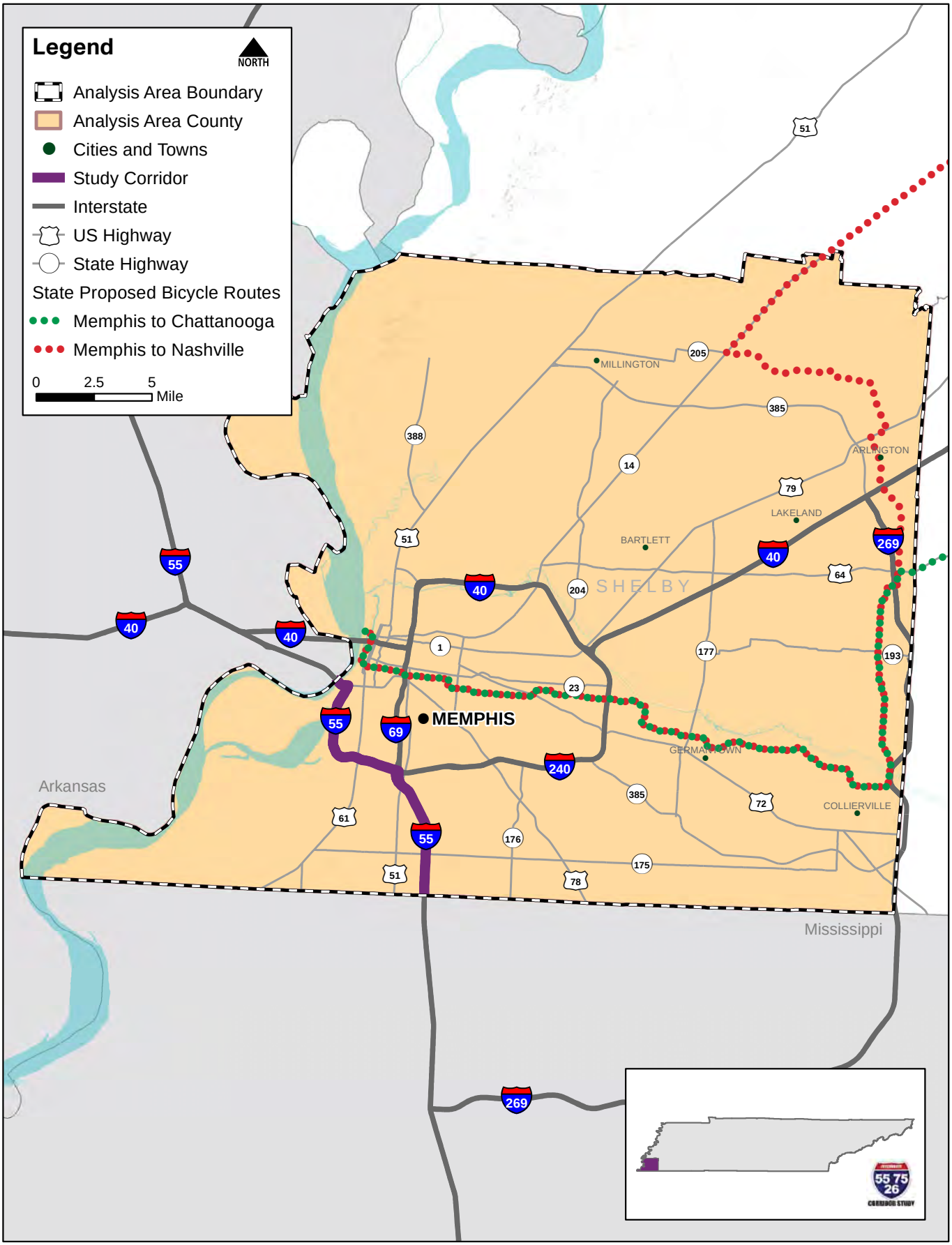


Figure 3-5. I-55 Planned State Route Bicycle Routes



Passenger Air and Rail Services

The Memphis International Airport is located less than one mile east of the I-55 corridor. While access to the airport is available from I-55, the main airport connection is from I-240. In addition to vehicle access, the Memphis International Airport is well served by transit. A MATA transit center is located near the airport and the airport is at present served by several transit routes including routes 32, 30, 64, 28, and 69.

The Memphis International Airport is a large regional employment center with a major economic impact on the region. In 2005, the Memphis International Airport accounted for 27% of jobs in the Memphis MSA (metropolitan statistical area).[1] The airport is served by many major airlines, including Air Canada, Frontier, Southwest airlines, and others. Memphis International Airport serves over 4 million passengers per year.[2]

Memphis International Airport is the hub for FedEx Global and is the busiest cargo airport in the United States.

The airport is also the hub for FedEx Global, making it the busiest cargo airport in the United States and the Western Hemisphere.[3] FedEx employs over 30,000 people at Memphis International Airport and has plans to expand its facilities.[4] In addition to FedEx being a major employer in the region, its operations generate considerable freight traffic in the area, including on I-55.

Currently, no fixed rail transit services exist within the I-55 study area; however, Amtrak services to New Orleans and Chicago run near the corridor. An Amtrak train station is located on South Main Street, near the I-55 and Crump Boulevard interchange.

In addition to the airport, Memphis also has passenger rail service accommodations through the Memphis Amtrak station located in the downtown area on South Main Street. The Amtrak station was renovated in the 1990s and contains commercial and residential uses in addition to transportation. The Amtrak station serves Memphis residents as well as the greater southwestern Tennessee region, as only a few Amtrak stations exist in Tennessee. Other Tennessee Amtrack stations are located in Newbern and Nashville.

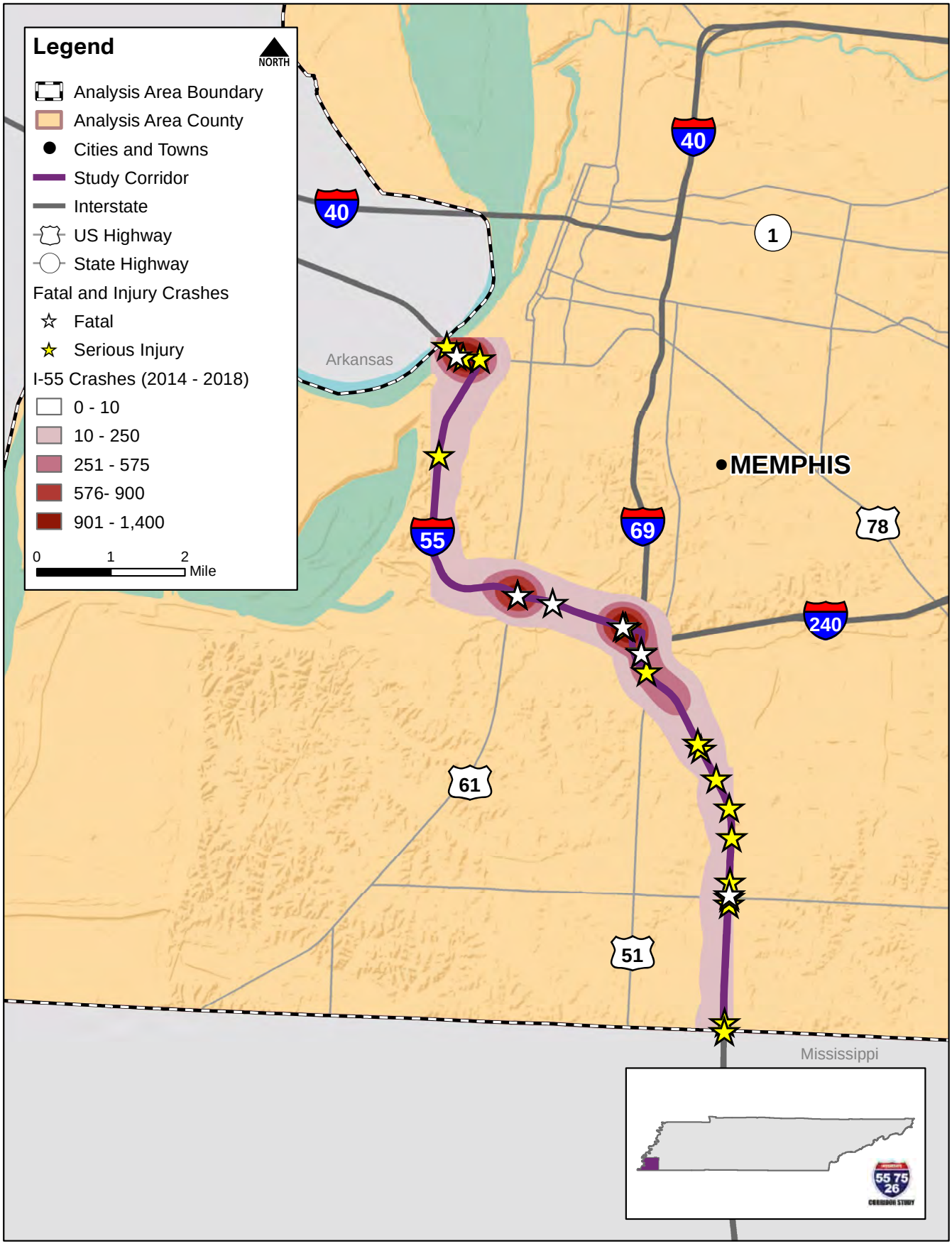
3.4. Safety

Extensive effort is being made by TDOT to improve highway safety through the SmartWay program. As noted, this program provides traffic data to users through message boards in addition to offering HELP freeway service patrols. An analysis of past accidents can help guide development and evaluation of future projects and safety improvements.

Efforts to improve safety will be evaluated as part of this study. In order to prioritize potential improvements, five-year (2014-2018) crash data will be evaluated along the I-55 corridor. Figure 3-6 shows corridor crashes

1-"The Economic Impact of Memphis International Airport". 2005. Accessed 12-14-2018. http://www.flymemphis.com/Areas/Admin/Images/FinancialReports/EcImpactFinal.pdf
2- http://www.flymemphis.com/Areas/Admin/Images/Upload_2018025103908.pdf
3-"FedEx keeps Memphis airport No. 2 in world ranking despite flat growth in 2017". Commercial Appeal. Accessed 12-13-2018. https://www.commercialappeal.com/story/money/industries/logistics/2018/04/19/fedex-keeps-memphis-airport-no-2-world-ranking-despite-flat-growth-2017/532815002/
4-"The Economic Impact of Memphis International Airport". 2005. Accessed 12-14-2018. http://www.flymemphis.com/Areas/Admin/Images/FinancialReports/EcImpactFinal.pdf

Figure 3-6. I-55 Crash Map



by density. The highest number of crashes occurred near freeway interchanges, including I-55/I-69/I-240 and I-55/US 61. There were also a number of crashes in the downtown portion of I-55, just east of the Mississippi River. Projects with the potential to improve operational safety at these locations will be prioritized accordingly.

3.5. Freight Data and Models

Freight movement is an important element of a regional and national economy, as more efficient modes and routes enable improved logistics and result in reduced transportation costs. These cost savings can then be reallocated to growth, providing better jobs and higher wages in the area. The existing and future freight flows in the region will be analyzed using the data sources described in this section as available to TDOT for the I-55 corridor, which is home to a number of major freight generators including:

- Memphis International Airport, the second largest cargo operations airport in the world,[5]
- International Port of Memphis, the fifth largest inland port in the United States,[6]
- Five Class I railroads with internodal yards (CSX, Norfolk Southern, Canadian National, BNSF Railway, and Union Pacific), and
- Petroleum pipelines (Diamond and Capline) and Valero refinery.

Tennessee State Data Center

The Tennessee State Data Center includes data such as historical and projected county and metropolitan populations and growth rates. The annual county population projections include the period of 2016-2070. The projections are sourced from the Boyd Center for Business and Economic Research at the University of Tennessee, Knoxville and census data.[7]

Transearch

Transearch is a database for purchase, providing county-level data on freight movements. Provided by IHS Global Insight, it contains data from more than 100 industry, commodity, and proprietary data sources. Freight flows can be analyzed by origin, destination, commodity, and transportation mode. In addition, forecasts for up to 30 years are available. The forecast is based on employment, output, and consumption factors within each county. TDOT has purchased Transearch data for years 2016 and 2045.

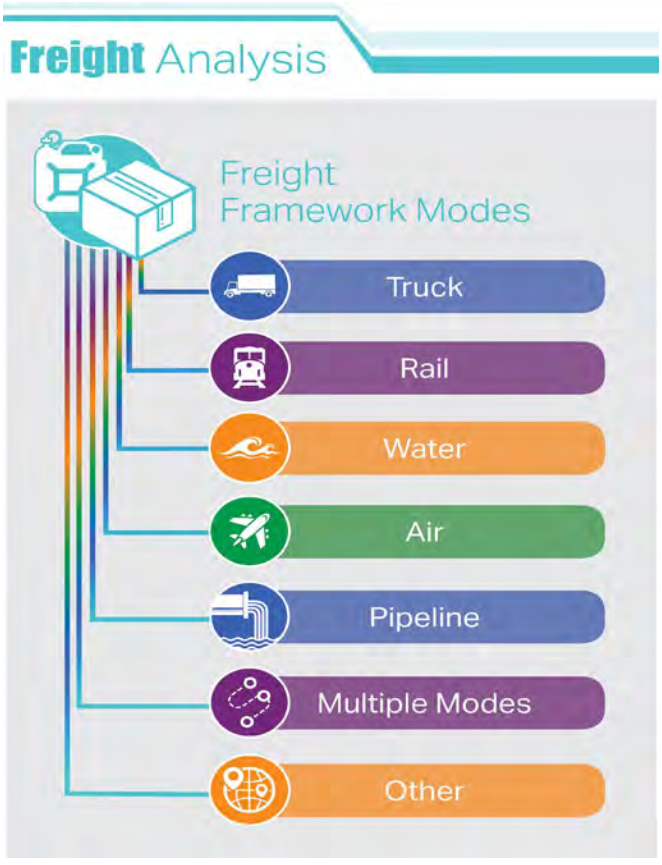
Modes include truck, rail, water, and air, and metrics include tonnage, value, and units of shipment. Freight movements including inbound, outbound, through, and intra can be analyzed by county or for 179 economic areas. Volumes are reported as tonnage, units or truck counts, value, vehicle-miles traveled, and ton-miles.

Of particular relevance to the study is the ability to analyze volumes along individual corridors for over 340 commodities, providing a current and future look at important modes and commodities using the I-55 corridor.

Freight Analysis Framework

The Federal Highway Administration's Freight Analysis Framework (FAF)[8] is a database containing data on value, tonnage, and ton-miles sorted by origin, destination, and commodity type for seven modes of transport: truck, rail, water, air, pipeline, multiple modes, and other/unknown. The freight movements are analyzed by total, domestic, and import or export flows. In addition to annual historical data from 2012-2016, forecasts are included in five-year increments for 2020 through 2045.

Origins and destinations can be specified by one of 123 FAF zones that include states, metropolitan areas, and areas outside of metropolitan areas. Data can be further delineated based on distance bands and the 44 commodity types.



5- Airports Council International World Airport Traffic Report, https://aci.aero/news/2018/09/20/aci-world-publishes-annual-world-airport-traffic-report/
6- Port of Memphis, http:\\portofmemphis.com/
7- The University of Tennessee Knoxville, Tennessee State Data Center, http://tndata.utk.edu/
8- Freight Analysis Framework Version 4, https://faf.ornl.gov/fafweb/Extraction0.aspx

Tennessee Statewide Travel Demand Model

The Tennessee Statewide Travel Demand Model (TSM) includes a commodity flow freight and truck demand model. Origin-designation (OD) data from the American Transportation Research Institute (ATRI), and truck flows from Transearch and FAF (Version 3) were compared to understand which datasets provide the most reliable estimates. ATRI OD patterns and Transearch commodity flows are used and goods are classified using the Standard Classification of Transported Goods (STCG) two-digit codes.

The modes used in the TSM include truck, truck-rail intermodal, carload rail, water, and air. Mode shares are estimated by commodity, distance, TDOT Region, market, and access to modes (port, rail, both, or neither). Payload factors are used to convert freight tons into truck trips and also consider empty truck trips. County employment and socioeconomic data are used to estimate trip generation rates, and annual tonnage productions and attractions are based on 2012 and 2040 Transearch data.

Finally, commercial vehicles are modeled in the quick response truck model and include consideration of three main categories of vehicle: commercial passenger vehicles such as school busses and shuttles; freight vehicles such as mail delivery, trash collection, and parcel pickup/delivery; and services vehicles such as plumbers and utility maintenance services. The TSM shows truck traffic by facility and allows for the testing of new facilities.

Air Carrier Statistics Database

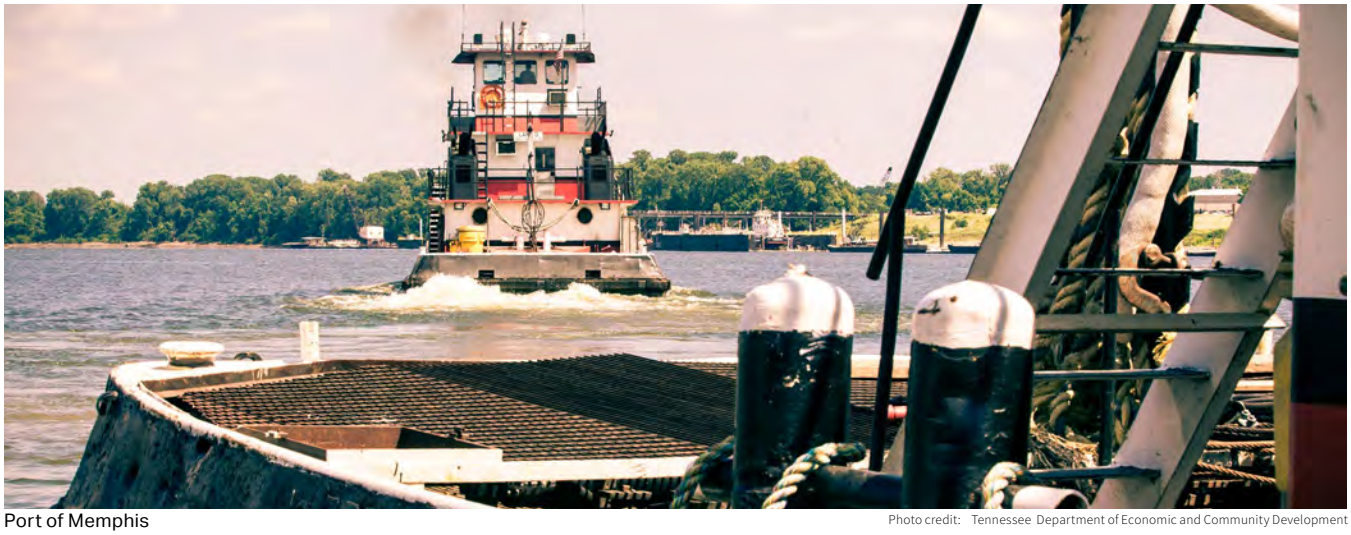
The Bureau of Transportation Statistics (BTS) compiles the Air Carrier Statistics Database, also known as the T-100 database.[9] Carriers with annual operating revenues of $20 million or more report the T-100 form monthly, and these data are collected by the Office of Airline Information within BTS. Data contained in the public database include weight and enplanements for domestic market, domestic segment, international market, and international segment, for passengers, freight, and mail. International data are delayed by 3 months and flights with both foreign origins and destinations are excluded. Trends can be observed from 1990 through 2018.

Waterborne Commerce Statistics

A number of pipelines are located in or near the I-55 corridor in the study area, with a particular concentration near the freeway's interchange with US 61. These pipelines transport natural gas and crude oil. Of particular note is the presence of the Valero Memphis Refinery located along I-55 at Mallory Avenue. Crude oil is transported via pipeline to the refinery, and products are distributed by barge and pipeline to their final destinations, including a pipeline from the refinery directly to Memphis International Airport, which crosses I-55 at the south leg of the I-55/69/240 interchange.

Pipeline data are maintained by USDOT's Pipeline and Hazardous Materials Safety Administration and accessed through the National Pipeline Mapping System data viewer. Annual and multi-year trend data are available.

The US Army Corps of Engineers (USACE) reports data for foreign and domestic goods moved through domestic waters. The data come from the Port Import Export Reporting Service (PIERS), the US Customs and Border Patrol, and the US Bureau of the Census. Data are available at the regional level and by port and include tonnage, ton-miles, and trips. Reports of cargo and trips for the Port of Memphis[10] are summarized for 1- and 5-year periods and reflect all traffic (foreign and domestic) and all commodities at the 1-, 2-, and 4-digit code levels. Annual data are available for 2000-2017.



Port of Memphis

Photo credit: Tennessee Department of Economic and Community Development

9- Bureau of Transportation Statistics, Air Carrier Statistics Database, https://www.transtats.bts.gov/DatabaseInfo.asp?DB_ID=111

10- USACE Waterborne Commerce Statistics, Memphis, TN Port, http://cwbi-ndc-nav.s3-website-us-east-1.amazonaws.com/files/wcsc/webpub/#/report-landing/year/2017/region/2/location/2294

3.6. Economic Access

Study area population and employment drives travel demand in the I-55 corridor. The locations of economic activity generators and the flows of goods and people between them are a key element in identifying existing and future transportation needs.

Population, Employment and, Demographics

An overview of key demographic data in the study area using information from the Tennessee Statewide Travel Demand Model (TSM) traffic analysis zones (TAZs) and from Woods & Poole Economics, Inc. is shown in Table 3-2. Woods & Poole data for 2010 were used for the population and employment numbers and the TSM (base year 2010) was used for household data.

In 2010, over 928,600 people resided in Shelby County. There were over 350,000 households and the county was home to 625,000 jobs. Figure 3-7 shows population density (people per square mile) in the study area by census tract.

According to OnTheMap, an online analysis tool provided by the US Census Bureau's Center for Economic Studies, there were a total of 455,096 people employed in Shelby County in 2015.[11] This accounts for approximately 71 percent of the region's share of employment. Approximately 323,900 people lived and worked in Shelby County. Almost 30 percent of the people employed in Shelby County lived outside of Shelby County. About eight percent of those who lived outside of Shelby County but worked in Shelby County came from DeSoto County, MS. Three percent came from Tipton County and about two percent came from Fayette County. The remaining workers came from other locations in Tennessee, Mississippi, and Arkansas.

Environmental Justice Populations

Title VI of the 1964 Civil Rights Act (Title VI) and Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations guide decision making about transportation investments utilizing Federal funding. Under Title VI, no person may be excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the basis of race, color, national origin, age, sex, disability or religion. Executive Order 12898 pertains to Environmental Justice (EJ), which is about identifying and addressing disproportionately high and adverse effects of proposed decisions on minority and low-income populations. TDOT must consider and mitigate environmental, health, social and economic impacts of any Federally-funded transportation projects on these populations. The corridor study will include consideration and participation of these populations as recommendations are evaluated.

Minority and low income populations in the study area have been mapped using data from the US Census Bureau's 2012-2016 American Community Survey (ACS). Minority populations are defined as non-white populations. To determine poverty, the US Census Bureau uses a set of money income thresholds that vary by family size and composition. If a family's total income is less than the family's threshold, then that family and every individual in the family is considered in poverty. For example, in 2016, the poverty threshold for an individual was $12,486. The poverty threshold for a family unit of four was $24,755. It should be noted that persons living in poverty represent the most extreme range of the region's low-income population. Persons whose income exceed the poverty thresholds may also be included in the populations covered by Executive Order 12898.

The ACS data showed the highest concentrations of minorities are found adjacent to the I-55 corridor in Memphis. The highest concentrations of people in poverty are found south of I-240 and east of I-55 and in downtown Memphis. Figures 3-8 and 3-9 show percentages of minority and poverty populations by census tract. These findings will be used to target outreach activities to these populations, which historically have shown lower participation rates in transportation planning than non-minority and non-low-income persons.

Table 3-2. 2010 Population, Households, and Employment – I-55

	Population	Households	Employment
County	**Total**	**Total**	**Total**
Shelby	928,652	350,971	625,163
Total	**928,652**	**350,971**	**625,163**

11-https://onthemap.ces.census.gov/

Figure 3-7. I-55 Population Density

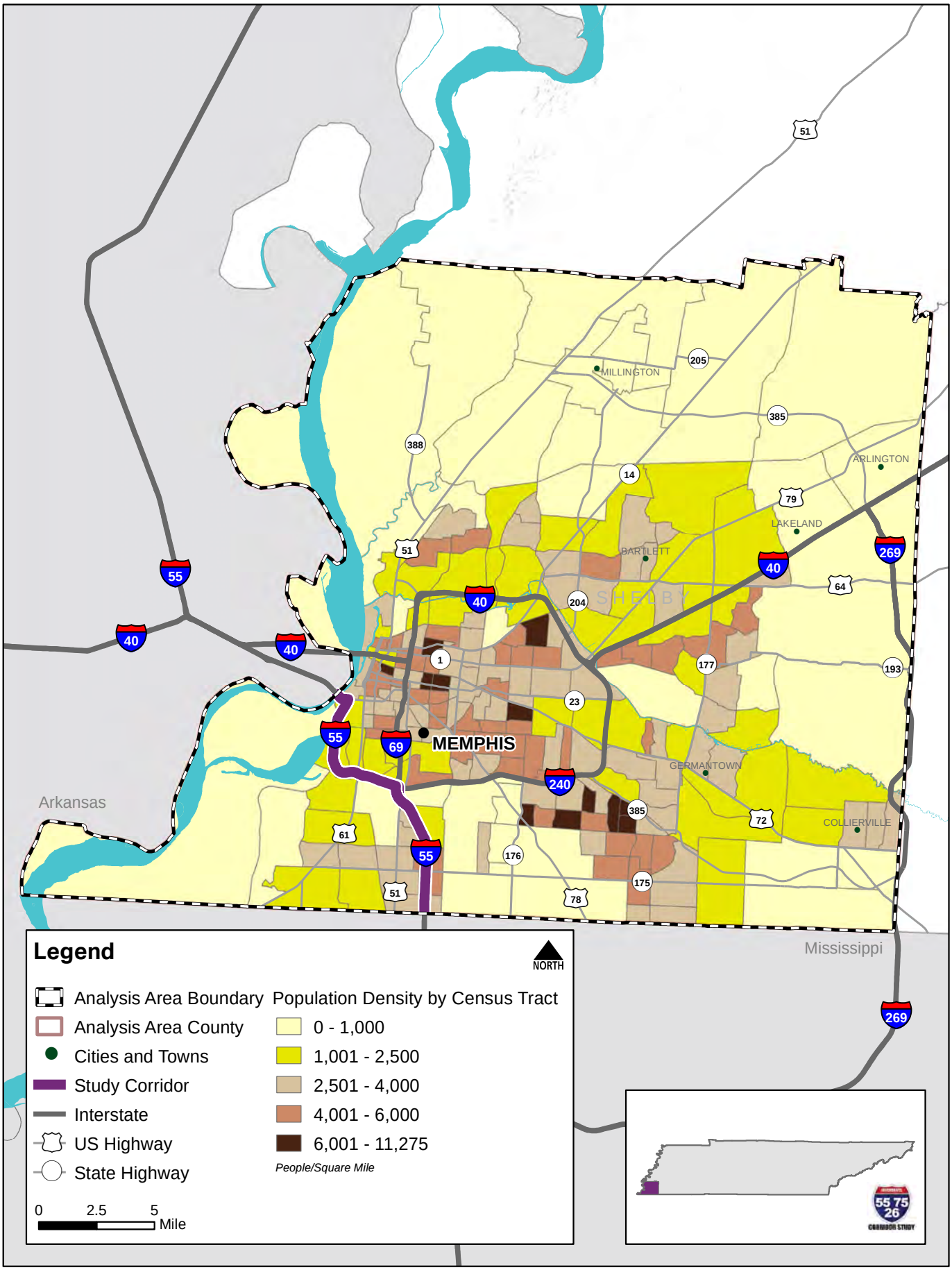


Figure 3-8. I-55 Minority Population

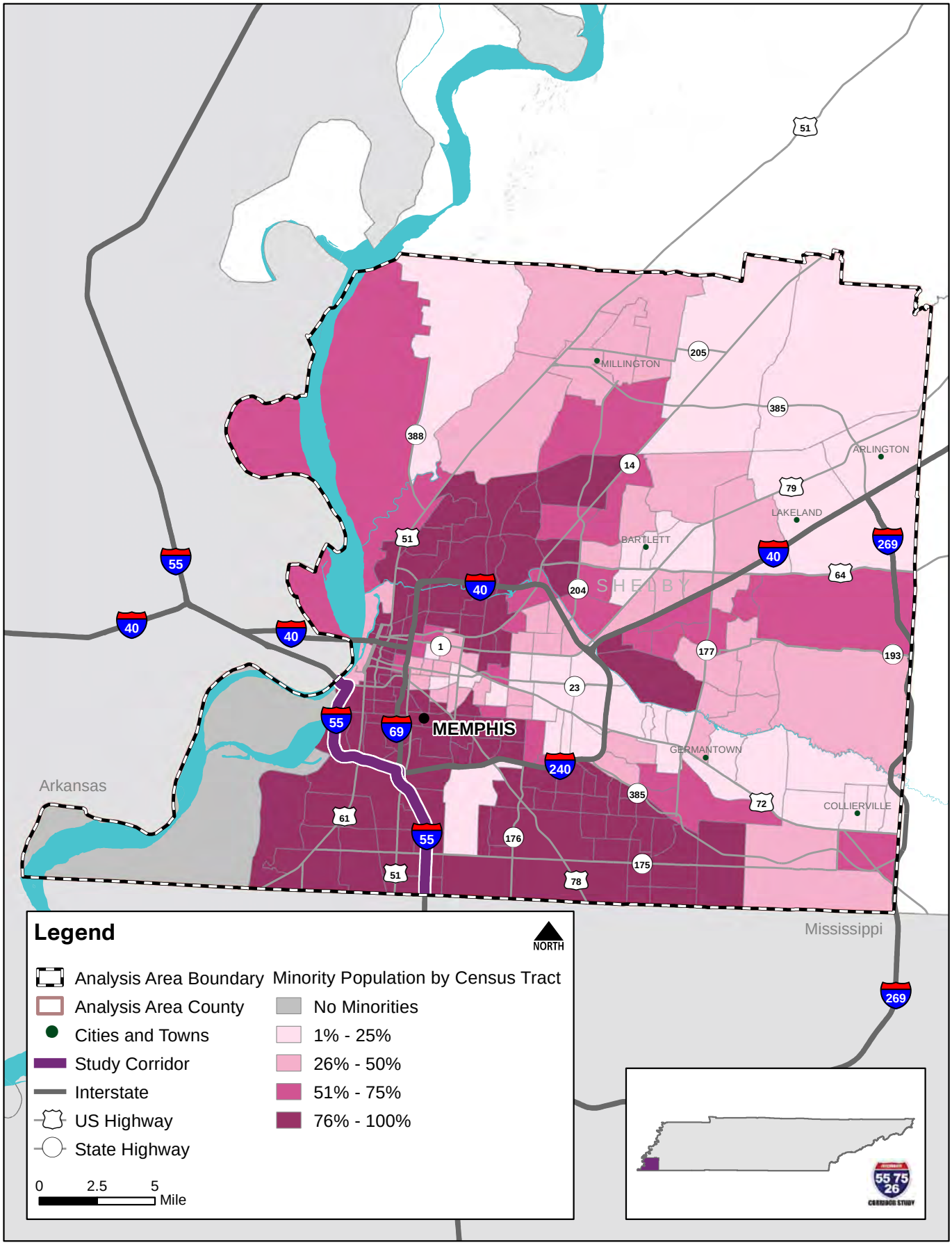
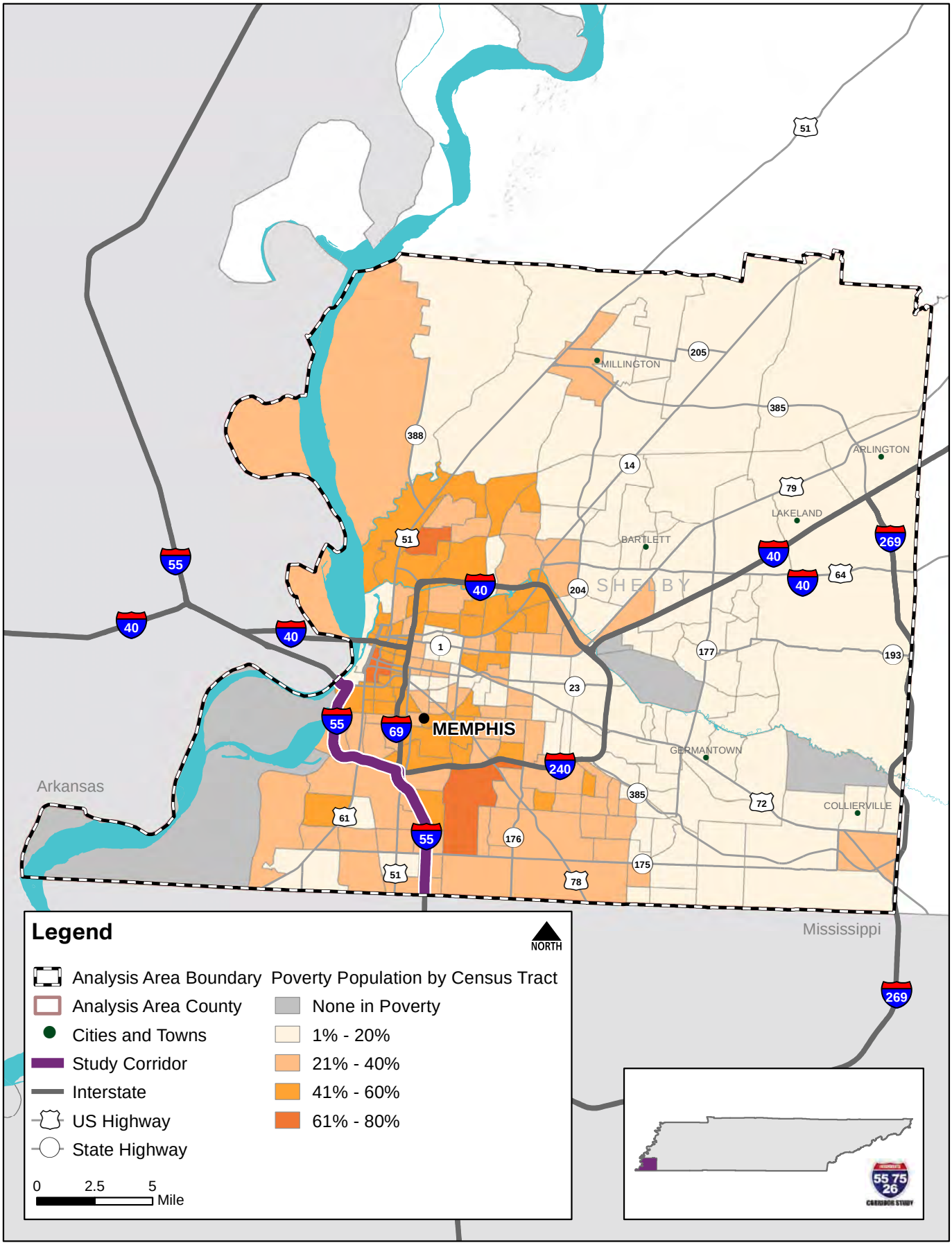


Figure 3-9. I-55 Poverty Population



3.7. Land Use

Land use, development patterns, and geographical and cultural features of the study area impact the demand for, design, and operations of transportation facilities. This section describes those factors in the I-55 corridor and the data used to assess them in relation to potential transportation system improvements.

Land Use and Development

A high-level review of existing land use conditions as well as plans was conducted to understand the existing character of the study area. In addition, this review helps to identify areas where major residential, commercial, or industrial growth is planned. For I-55, this evaluation included only City of Memphis data.

A comprehensive set of parcel-level land use data for the City of Memphis was collected from the Memphis MPO for the area surrounding the I-55 corridor. Using this data, approximately 176,000 acres included in the study area were categorized into the following land use categories:

- Residential – Land containing single-family homes, duplexes, multi-family uses, mobile homes, mobile home parks, and resort residential properties
- Commercial – General commercial use, office use, motel or hotel use, or nursing homes
- Industrial – Light industry or warehousing and heavy industry
- Public/Semi-Public Uses – Parcels owned by federal, state, county, or city governments, as well as churches, fraternal land, and cemeteries.
- Water Features – Bodies of water such as rivers and lakes that are not contained within other parcels. This does not include water bodies such as farm ponds.
- Utilities - Utilities or Local Assessed Utilities.
- Vacant – Land that has not been converted to a developed use, such vacant lots and small properties that are not assigned to agricultural or timber uses. Includes Port of Memphis and Memphis International Airport.

> Many areas surrounding the I-55 corridor are poised for redevelopment and growth.

The I-55 corridor is exclusively located in Shelby County, and more specifically, within the Memphis city limits. I-55 extends approximately 12.3 miles through the westernmost portion of the county. The area surrounding the corridor can be broken into two distinct areas. West of I-240, the I-55 corridor is surrounded by mostly vacant and/or industrial land. To the south, I-55 is surrounded by mostly residential land with some commercial, industrial, and public/semi-public parcels as well. Figure 3-10 shows land use within the Memphis city limits.

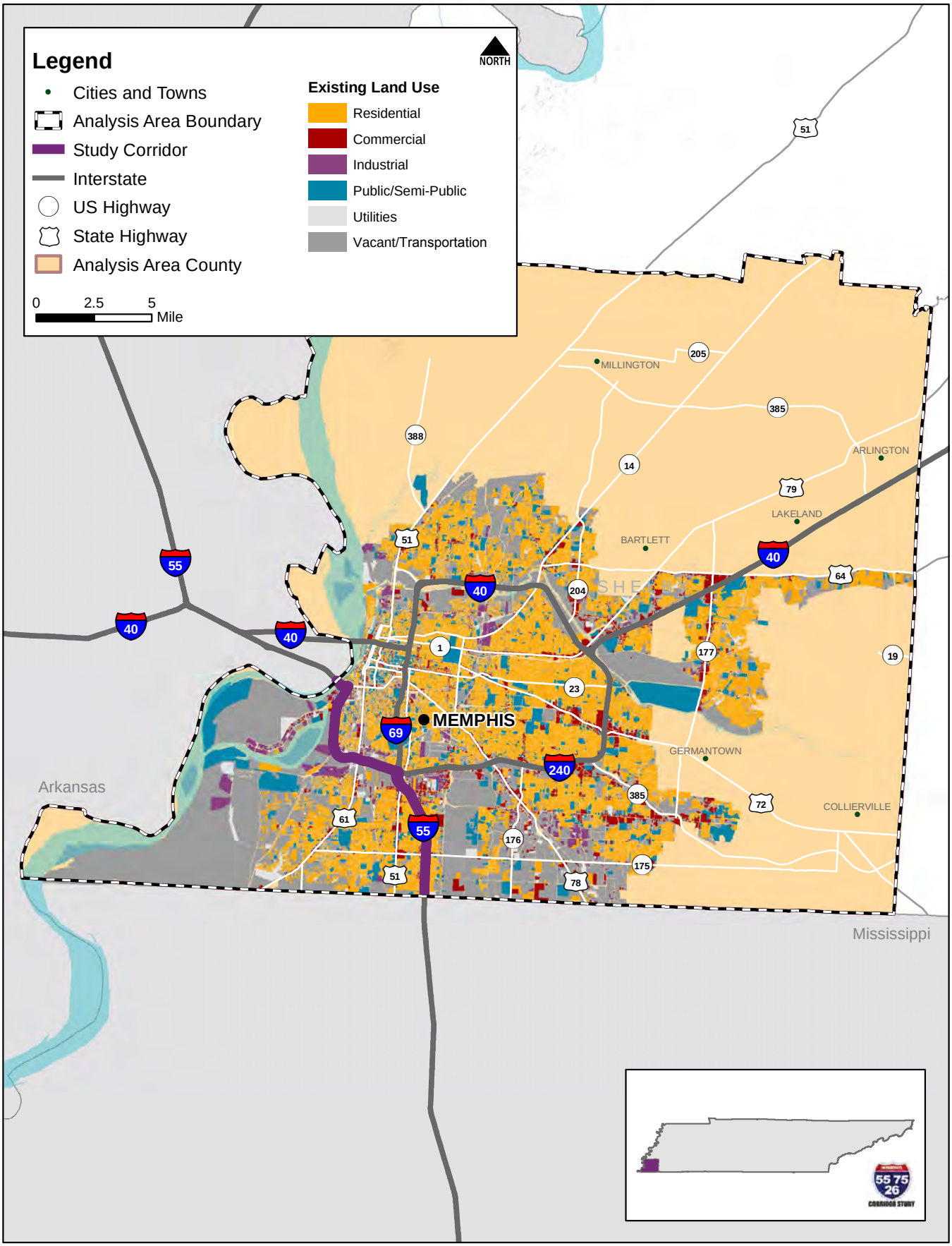
Table 3-3 shows the distribution of land use within the Memphis city limits. Land use composition is fairly consistent with a large presence of residential and public/semi-pubic land. Due to the proximity of the Mississippi River and Nonconnah Creek (running alongside much of I-55), a significant portion of the land surrounding the corridor is located within the floodplain and is therefore vacant.

The City of Memphis is currently updating its comprehensive plan, Memphis 3.0, with an expectation of finalizing this new vision in early 2019. This plan will ultimately address existing land use conditions and lay the foundation for desired growth and development within the Memphis community. Future growth along the I-55 corridor is limited, with some residential and commercial development expected to occur in the far northern portion of the study area near downtown Memphis. In addition, Graceland is a major tourist attraction in the area, with future expansions in mind, and is primarily served by I-55. Due to historic disinvestment near the I-55 corridor, land in this area could be poised for redevelopment and growth, most of which would likely manifest in the warehousing, freight, and industrial employment sectors.

Table 3-3. Existing Land Use – I-55

Land Use Category	City of Memphis ~176 ,000 acres
Residential	35%
Commercial	6%
Industrial	3%
Public/Semi-Public	11%
Utilities/ Transportation/ Vacant	46%

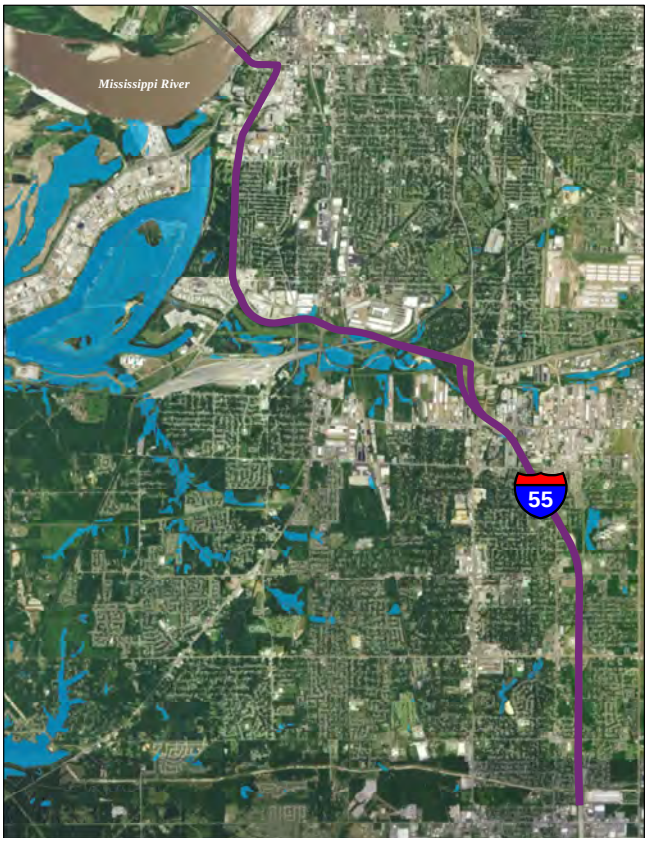
Figure 3-10. I-55 Existing Land Use



Environmental Features: Wetlands

Wetlands are important natural resources across the state and benefit Tennessee ecologically, socially, and economically. They provide habitat for plants and wildlife, recharge groundwater, provide clean drinking water, support recreational activities, and reduce flooding. Proposed improvements should avoid wetlands when possible and minimize or mitigate impacts when avoidance is not possible.

The US Fish and Wildlife Service (USFWS) is the federal agency that provides wetland information to the public. The latest wetlands database (updated May 2018) was obtained from the USFWS National Wetlands Inventory (NWI) for the entire state of Tennessee. For the purpose of this planning level study, this database is sufficient to draw general conclusions about avoiding or minimizing impacts to these resources; however, additional field surveying would be necessary for design activities.



Wetlands (shown in blue) are adjacent to the I-55 corridor.

Cultural Features: Historic Resources

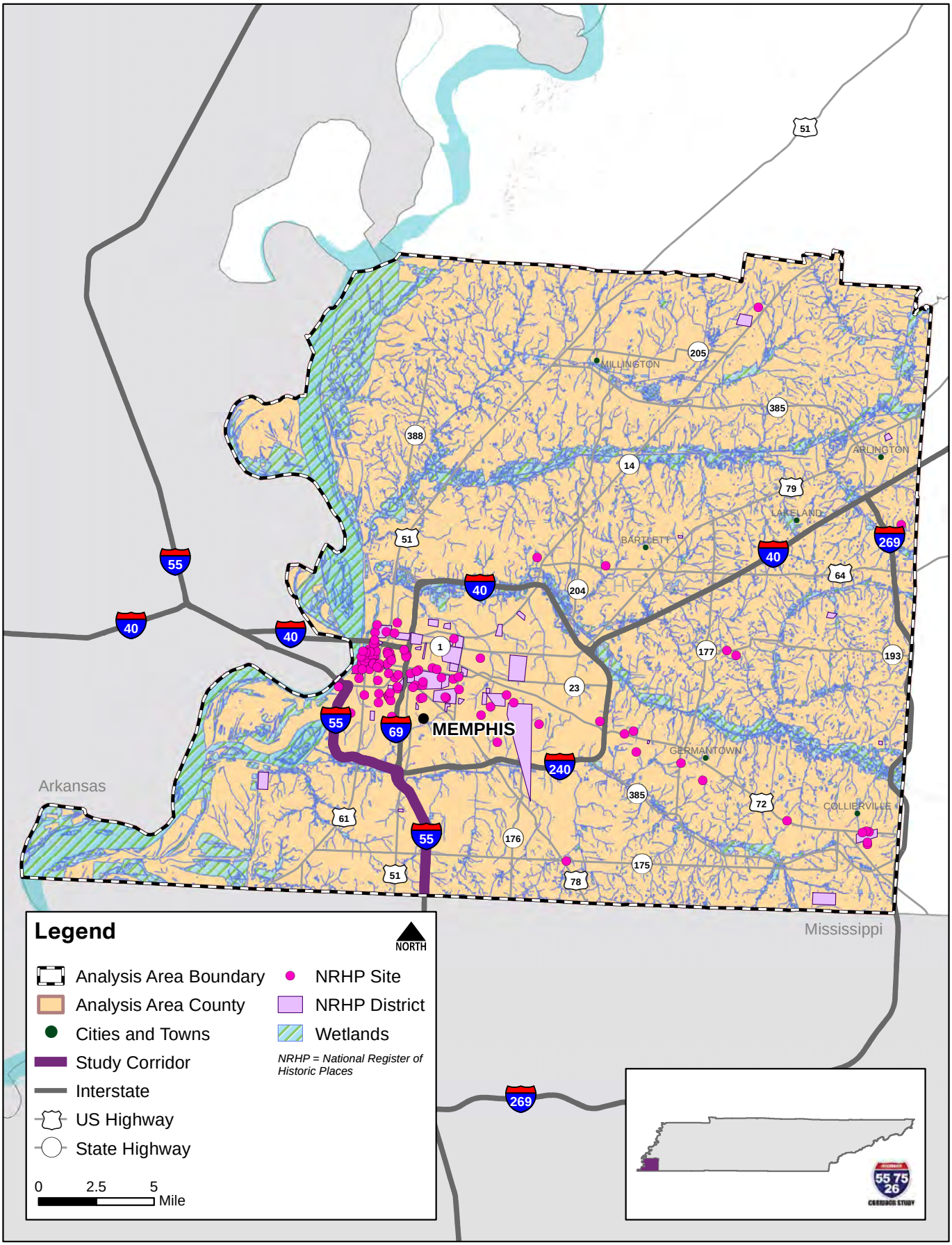
Historic resources are important to the state and must be avoided when possible. Historic resources are sites, buildings and structures that are significant in American history. Preserving these resources is beneficial to a community's culture and local economy. Tennessee has a rich history that can be witnessed and studied through its historic structures and places.

The Mississippi River, near the I-55 bridge. Photo credit: TDOT

The US National Park Service is the agency that houses the National Register of Historic Places (NRHP), the official list of the country's historic places worthy of preservation. The State of Tennessee also has a list of state-owned historic resources, which is maintained by the Tennessee Historical Commission. This commission is the State Historic Preservation Office (SHPO) for Tennessee. A review of these lists indicated there are no state historic sites in the I-55 corridor study area, but 121 sites and 55 districts from the National Register were identified. Sites such as the Peabody Hotel, the Elvis Presley House and the Tennessee Brewing building were included on the National Register list. Districts included the Beale Street Historic District, Graceland and the Memphis National Cemetery. For the purpose of this planning level study, this information is sufficient; however, additional field surveying would be necessary for design activities. Figure 3-11 shows wetlands and historic resources data for the I-55 corridor study area.

Graceland is located near the I-55 corridor. It is a major tourist destination.
Photo credit: memphistravel.com

Figure 3-11. I-55 Wetlands and Historic Features



4. Forecast Future Conditions

As a long-range plan to guide future investments in the transportation system, this study relies not only on an analysis of existing conditions in the I-55 corridor, but evaluates forecasted future conditions. Population and employment growth will affect transportation demand in the future, and planned transportation improvements will alter the operations of the system. This section documents data used to understand potential future conditions in the corridor.

4.1. Population and Employment Growth

Socioeconomic data projections prepared for the Tennessee Statewide Travel Demand Model (TSM) and from Woods & Poole were examined to determine population, household and employment growth for 2020, 2030, and 2040. Population and employment data are from Woods & Poole, while household data are from the TSM. Table 4-1 shows the projected population, household, and employment within the study area.

By 2040, Shelby County is projected to have over one million people. By 2040, employment is projected to be over 855,000, which is a 37 percent increase over 2010 employment. According to survey responses from the West Tennessee RPO and the Memphis MPO,[12] growth along the I-55 corridor is limited, with some residential and commercial development to the far north near downtown Memphis. South Memphis struggles with underemployment and limited economic opportunity for some of its residents and businesses. However, the overall region is still a growing logistics hub and the corridor is an important link for industry. The Port of Memphis and Memphis International Airport are major employment hubs that could see future investment in warehousing, freight and industrial employment. The lack of high frequency transit, a high percentage of zero-vehicle households, the state of road maintenance, and low intersection capacity are all barriers to transportation in this area that will need to be addressed to accommodate this industrial growth.

Table 4-1. Population, Households, Employment (2020, 2030, 2040)– I-55

	Population		Households		Employment	
Shelby County	**Total**	**Increase from 2010**	**Total**	**Increase from 2010**	**Total**	**Increase from 2010**
2020	950,822	2%	368,753	5%	705,584	13%
2030	987,484	6%	386,655	10%	784,711	26%
2040	1,003,931	8%	404,653	15%	855,013	37%

12--Project Advisory Committee Survey, December 2018

Figure 4-1. I-55 Change in Population (2010 to 2040)

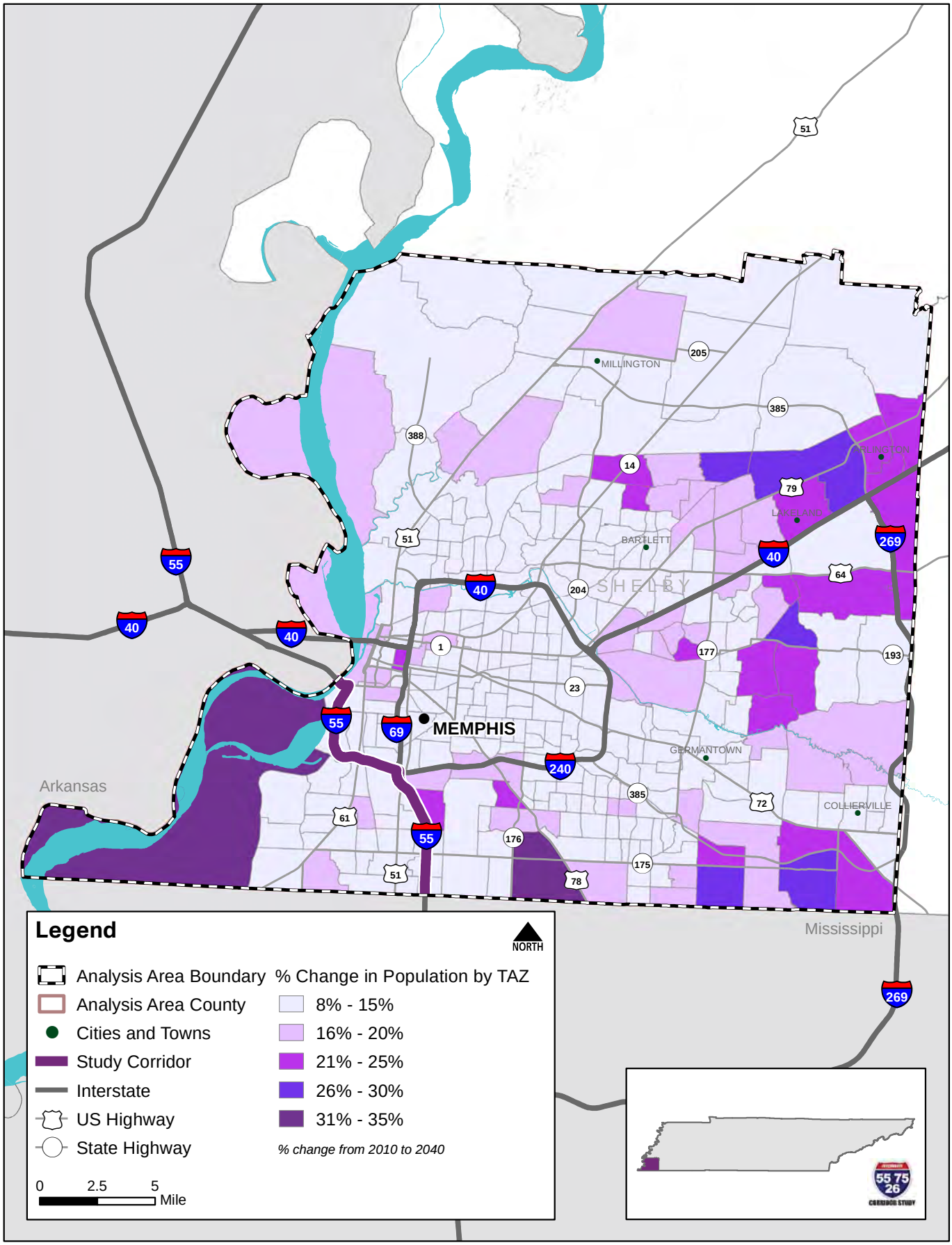


Figure 4-2.I-55 Change in Number of Households (2010 to 2040)

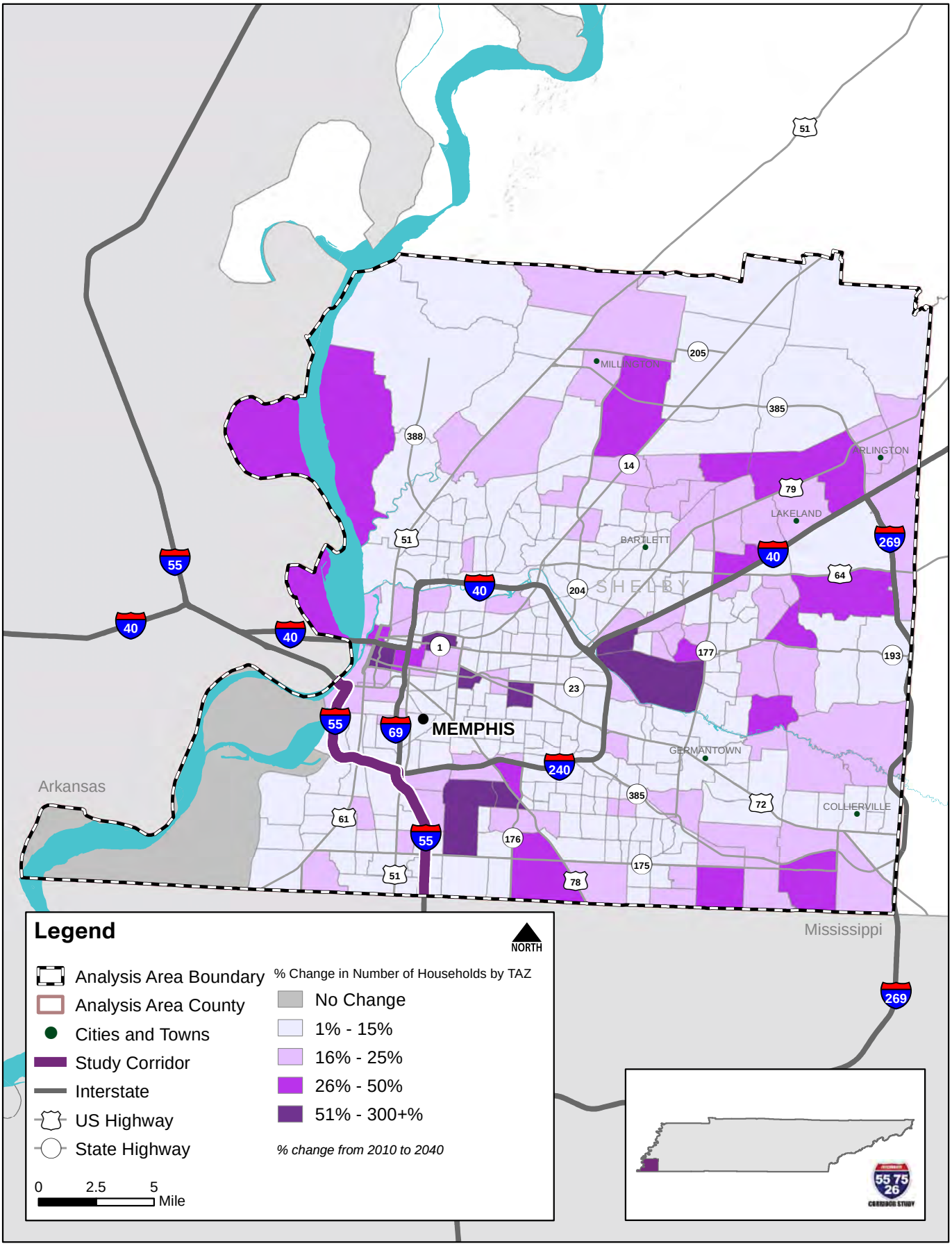
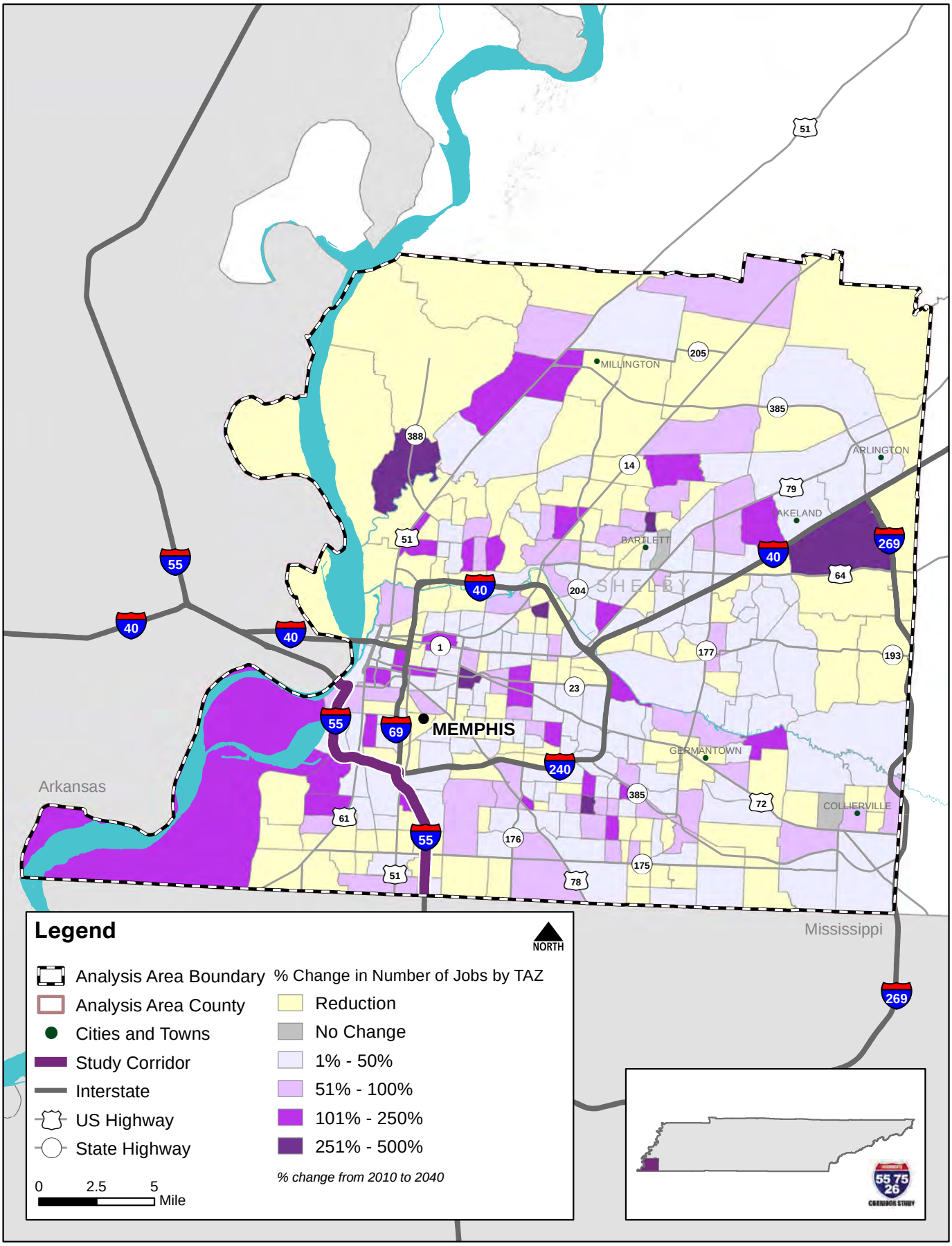


Figure 4-3. I-55 Change in Number of Jobs (2010 to 2040)



4.2. Planned Transportation Projects

TDOT continues to improve capacity and safety as needed along the I-55 study corridor. In January 2016, the 2040 Regional Transportation Plan (RTP) was adopted by the Memphis Metropolitan Planning Organization (MPO) Executive Board. In addition to this document, MPO Transportation Improvement Program (TIP) and TDOT State Transportation Improvement Program (STIP) were reviewed to identify the planned and programmed projects along the I-55 study corridor.

Projects along the I-55 study corridor includes widening the existing roads, construction of new roadways and the reconstruction of interchanges. The full list of major planned transportation projects is shown in Table 4-2. Figures 4-4, 4-5, and 4-6 show the distribution of the projects. This list includes only projects included in the list of fiscally constrained initiatives. Some MPO projects for which a need has been determined, but no funding source has yet been identified, are not included in this report.

Table 4-2. Planned and Programmed Projects – I-55

Source	ID	Route	Project Limits	Improvement	Cost	Year	Lead Agency/ Funding Type	LRTP# or TIP #
Memphis MPO FY 2017 - 2020 TIP, 2040 RTP and 2050 RTP	1	I-55	Interchange at Crump Boulevard	Interchange modification	$74,278,000	2020	NHPP	TIP# 79019
	2	I-240	Interchange with Airways Blvd	Reconstruct interchange	TBD	2025	TBD	TBD
	3	Plough Blvd	Plough Blvd interchange with Winchester Rd	Replace at-grade intersection with grade-separated interchange	TBD	2020	TBD	TBD
	4	3rd St (US-61)	Vance Ave to Winchester Rd	Signal coordination	$10,928,713	E+C	CMAQ-S	CMAQ-2002-09
	5	Short-Range Transit Plan Route 32 Whitehaven	FedEx Blvd to TN/MS state line	Extend Route 32 into DeSoto Co to connect to Goodman Rd route	TBD	2020	TBD	TBD
	6	Airways Rd Arterial BRT	Airport to Union Ave	High-Capacity transit	TBD	2045	TBD	TBD
	7	I-240	I-40 to I-55	Widen 6 to 8 lanes	$51,000,000	2025	NHPP	TIP# 79035
	8	Holmes Road-West	Mill Branch to Tchulahoma	Widen 2 and 4 to 7 lanes	$30,078,728	E+C	STP-M	STP-M-2002-14
	9	I-240	NB I-55 to I-240 N	Widen 2 to 3 lanes	$26,497,649	2025	STP-M	RTP# 7
	10	I-240	SB I-240 to I-55 S	Widen 3 to 4 lanes	$32,296,073	2040	STP-S	RTP# 47

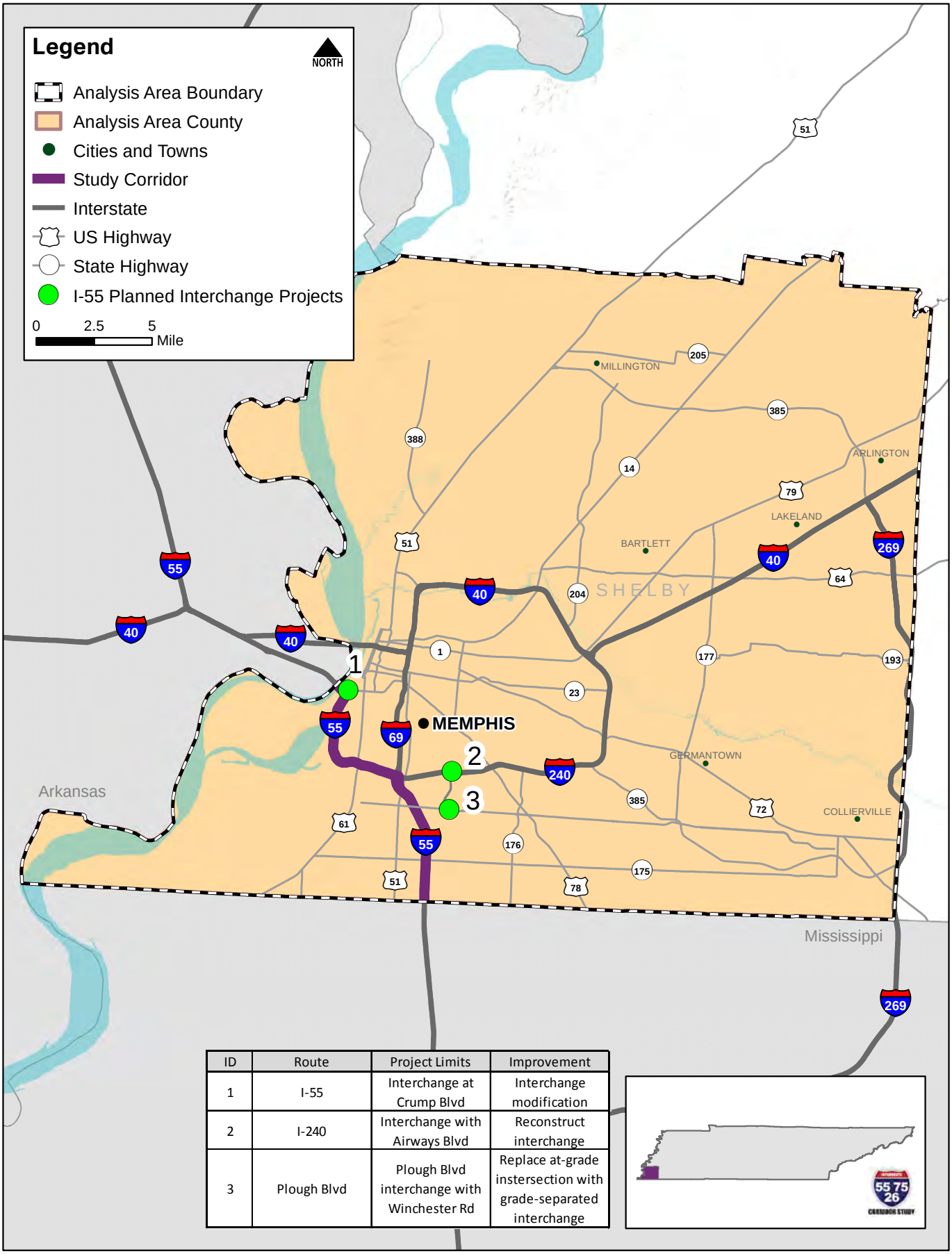
Table 4-2. Planned and Programmed Projects – I-55 (continued)

Source	ID	Route	Project Limits	Improvement	Cost	Year	Lead Agency/ Funding Type	LRTP# or TIP #
Memphis MPO FY 2017 - 2020 TIP, 2040 RTP and 2050 RTP	11	Florida St	McLemore Ave to US-61/ SR-1	Widen 2 to 5 lanes	TBD	2050	TBD	TBD
	12	South Parkway	Western Termini to Mississippi Blvd	Rehabilitate	TBD	2040	TBD	TBD
	13	Elvis Presley Blvd	Shelby Dr to Brooks Rd	Construct 6 lane roadway; Widen 4 to 6 lanes	TBD	2020	TBD	TBD
	14	Elvis Presley Blvd	Commercial Pkwy to S of Winchester	Construct 6 lane roadway; Widen 4 to 6 lanes	TBD	TBD	TBD	TBD
	15	Elvis Presley Blvd	Craft Rd to S of Winchester	Construct 6 lane roadway; Widen 4 to 6 lanes	TBD	2030	TBD	TBD
	16	Elvis Presley Blvd	Shelby Dr to Craft Rd	Construct 6 lane roadway; Widen 4 to 6 lanes	TBD	2030	TBD	TBD

Harahan Bridge

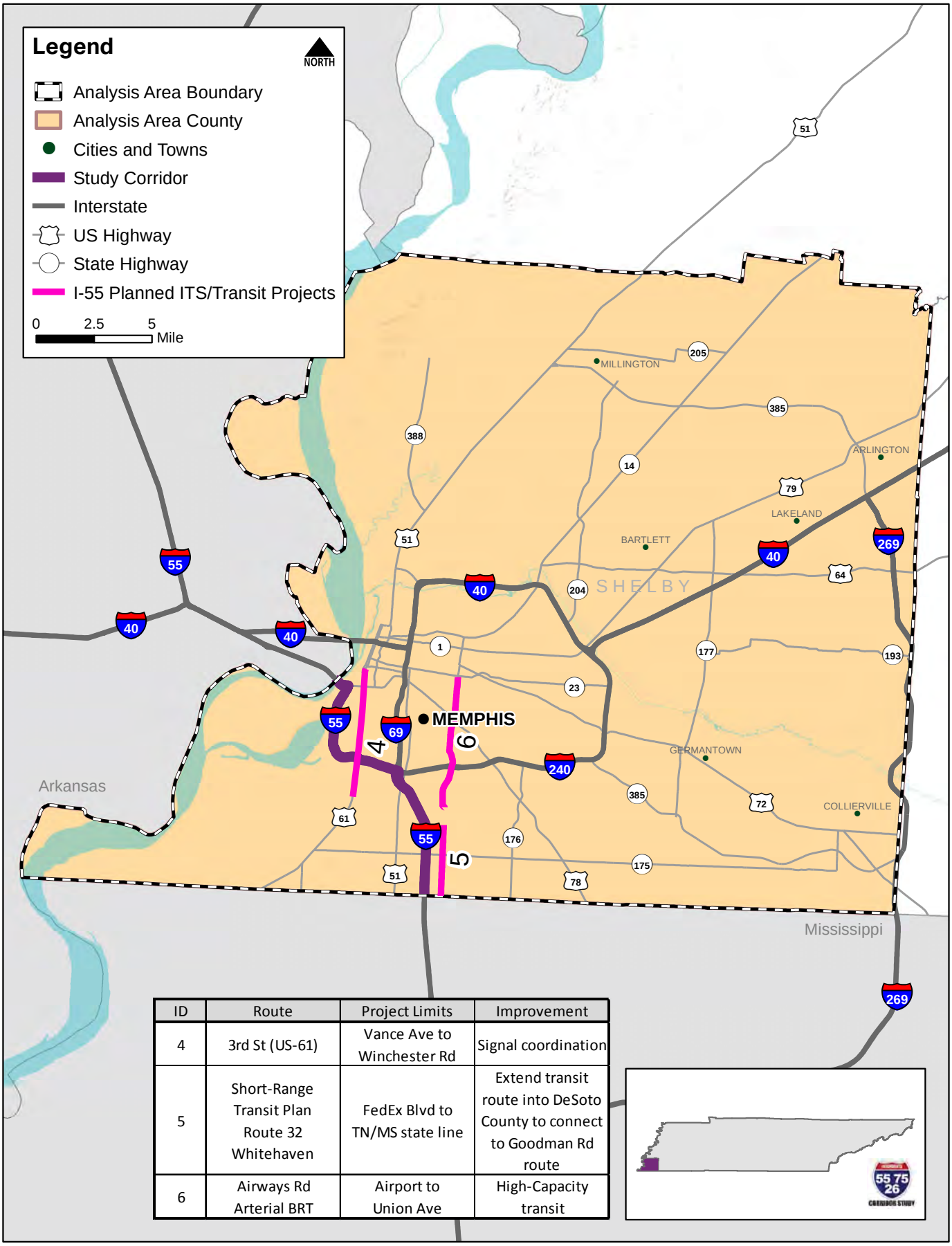
Photo credit: Big River Strategic Initiative, LLC

Figure 4-4. I-55 Planned Interchange Projects



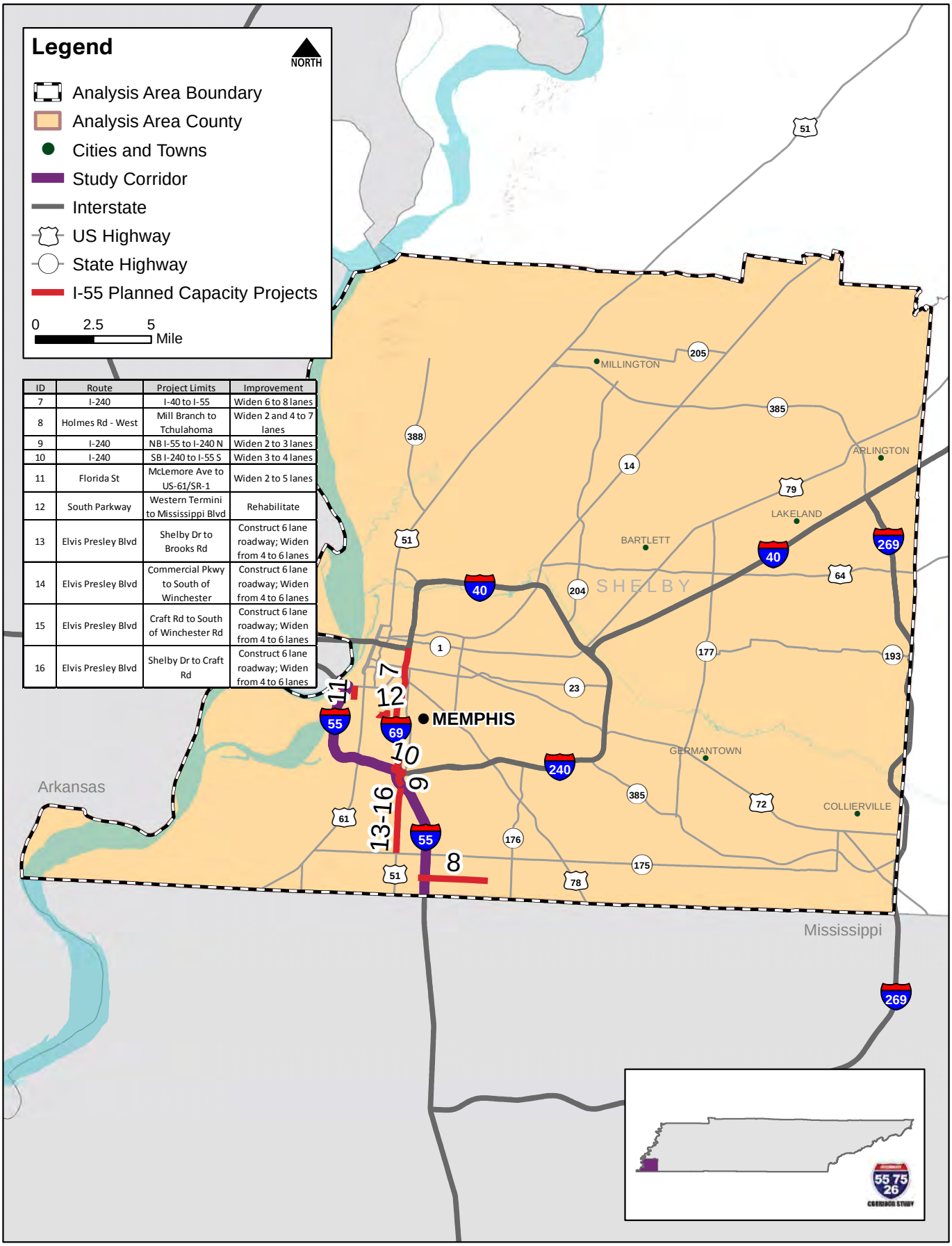
ID	Route	Project Limits	Improvement
1	I-55	Interchange at Crump Blvd	Interchange modification
2	I-240	Interchange with Airways Blvd	Reconstruct interchange
3	Plough Blvd	Plough Blvd interchange with Winchester Rd	Replace at-grade instersection with grade-separated interchange

Figure 4-5. I-55 Planned Transit and ITS Projects



ID	Route	Project Limits	Improvement
4	3rd St (US-61)	Vance Ave to Winchester Rd	Signal coordination
5	Short-Range Transit Plan Route 32 Whitehaven	FedEx Blvd to TN/MS state line	Extend transit route into DeSoto County to connect to Goodman Rd route
6	Airways Rd Arterial BRT	Airport to Union Ave	High-Capacity transit

Figure 4-6. I-55 Planned Capacity and Reconstruction Projects



ID	Route	Project Limits	Improvement
7	I-240	I-40 to I-55	Widen 6 to 8 lanes
8	Holmes Rd - West	Mill Branch to Tchulahoma	Widen 2 and 4 to 7 lanes
9	I-240	NB I-55 to I-240 N	Widen 2 to 3 lanes
10	I-240	SB I-240 to I-55 S	Widen 3 to 4 lanes
11	Florida St	McLemore Ave to US-61/SR-1	Widen 2 to 5 lanes
12	South Parkway	Western Termini to Mississippi Blvd	Rehabilitate
13	Elvis Presley Blvd	Shelby Dr to Brooks Rd	Construct 6 lane roadway; Widen from 4 to 6 lanes
14	Elvis Presley Blvd	Commercial Pkwy to South of Winchester	Construct 6 lane roadway; Widen from 4 to 6 lanes
15	Elvis Presley Blvd	Craft Rd to South of Winchester Rd	Construct 6 lane roadway; Widen from 4 to 6 lanes
16	Elvis Presley Blvd	Shelby Dr to Craft Rd	Construct 6 lane roadway; Widen from 4 to 6 lanes

I-155 Corridor

▶ Corridor Data and Information Inventory

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Figures

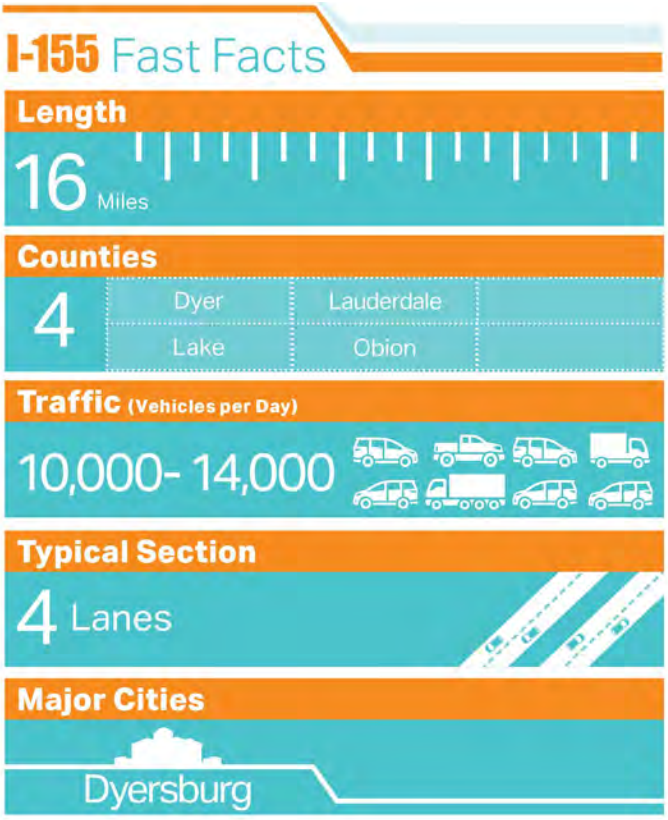
Tables

I-155 Corridor

1. Introduction

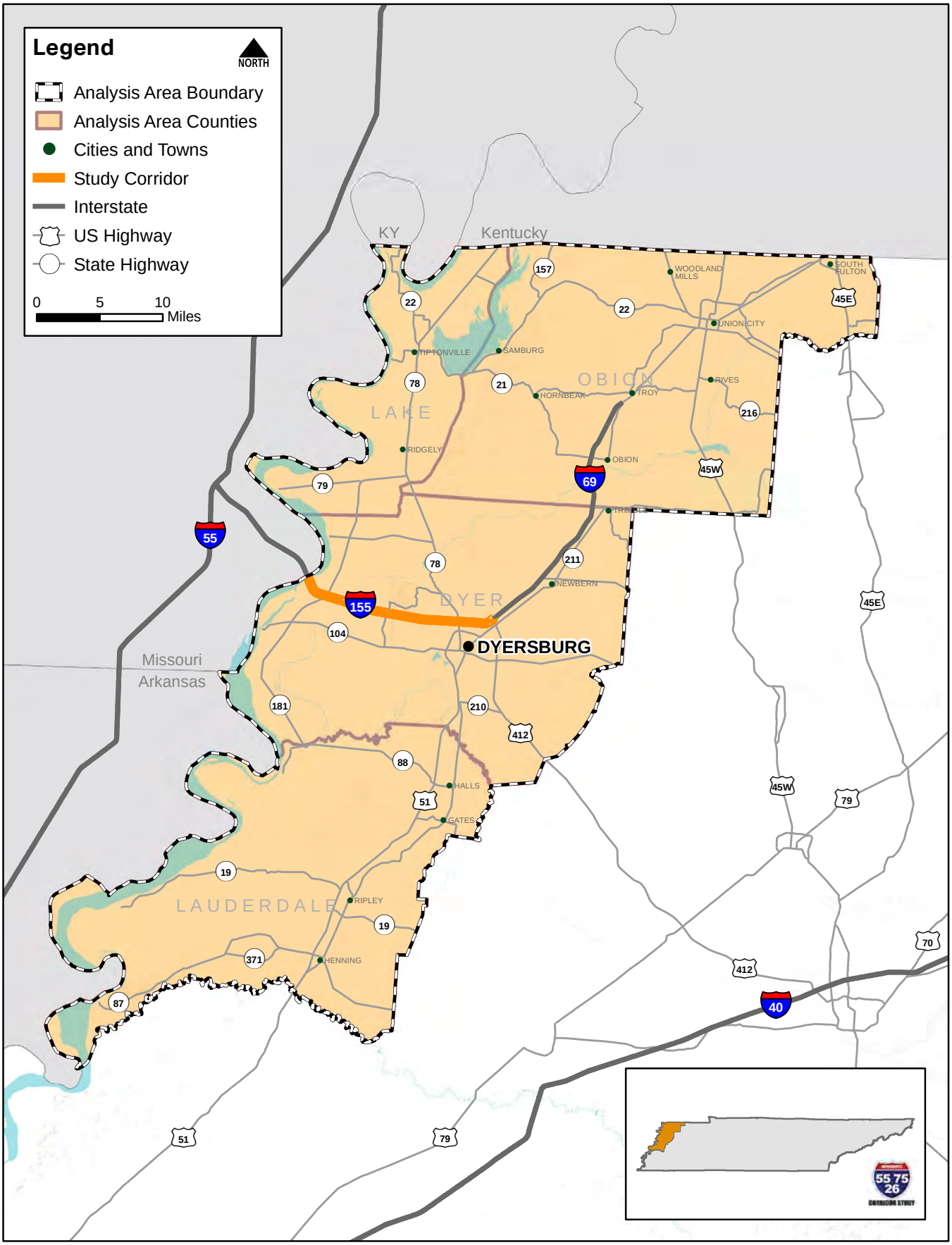
The I-155 Corridor Data and Information Inventory describes data used to develop and evaluate multimodal transportation improvement options for the I-155 corridor in northwestern Tennessee. This corridor was studied as part of a larger corridor study that included I-55, I-75 and I-26 in addition to I-155. Interstate 155 is an east-west spur freeway connecting I-55 in southeast Missouri with the city of Dyersburg, Tennessee, terminating at US-51 in Dyersburg. The length of the Tennessee portion of the I-155 corridor is approximately 16 miles. The study area is shown in Figure 1-1; it includes Dyer, Lake, Lauderdale, and Obion counties.

The main purpose of this Study is to identify existing and emerging deficiencies along the I-155 corridor and to evaluate and prioritize improvements to address those deficiencies. The study will consider innovative approaches to explore the multimodal issues and opportunities available to the Tennessee Department of Transportation (TDOT) to address capacity and congestion, enhance operational efficiency, improve safety and security, expand transportation choices, and support economic growth and competitiveness. This memo documents the data gathered to support study analysis. It includes information about existing transportation facilities and their operations, corridor demographic and economic conditions (and forecasted changes in those conditions), and planned improvement projects. Where applicable, it provides snapshots of existing conditions across these factors.



The I-155 corridor is being studied as part of a larger corridor study that also includes I-55, I-75, and I-26.

Figure 1-1. I-155 Corridor Study Area



2. Previous and Current Plans and Studies

TDOT has conducted a number of regional and statewide studies that have included the I-155 corridor, but this is the first study that focuses specifically on I-155. Previous studies have focused on all modes of transportation and various levels of infrastructure, from statewide to regional. Key studies, plans, and programs were reviewed to develop an understanding of the corridor and the needs and opportunities that have been previously identified. The TDOT State Transportation Improvement Program (STIP) was reviewed to identify planned projects in the vicinity of the I-155 study corridor. See Section 4.2 for a summary of these projects.

TN TDOT Department of Transportation

TDOT Plans

1. Tennessee Statewide Multimodal Freight Plan (2018)
2. Region 4 Incident Management Plan (2016)
3. State Transportation Improvement Program, 2017-2020 (2016)
4. 25-Year Long Range Transportation Policy Plan (2015)
5. State of Tennessee Strategic Highway Safety Plan (2014)
6. Mississippi River Crossing Feasibility and Location Study (2006)

The Caruthersville Bridge carries I-155 over the Mississippi River on the west end of the study corridor.

Photo Credit: Jimmy Emerson

No corridor-specific studies have been completed for the I-155 corridor.

3. Existing Data and Information

This section summarizes the transportation, demographic, land use, economic, and other data compiled for this study. When applicable, it presents snapshots of existing conditions in the I-155 corridor.

3.1 Transportation Capacity, Travel Demand, and Congestion

Available existing data and information were compiled to evaluate current and projected roadway capacity, demand, and congestion conditions in the I-155 study corridor.

Existing Highway Network

Highway Performance Monitoring System (HPMS) data was obtained from TDOT. The data included road names, cardinal direction headings, functional class, ownership, and traffic volumes. TDOT also provided Transearch data, which included highway and rail network geometrics, such as number of lanes and rail owner and classification. Intelligent Transportation Systems (ITS) facilities and resources were also provided by TDOT. In addition, the US Census 2010 Geographic Information System files for all streets in the study area were obtained to supplement local road information.

Existing Travel Volumes

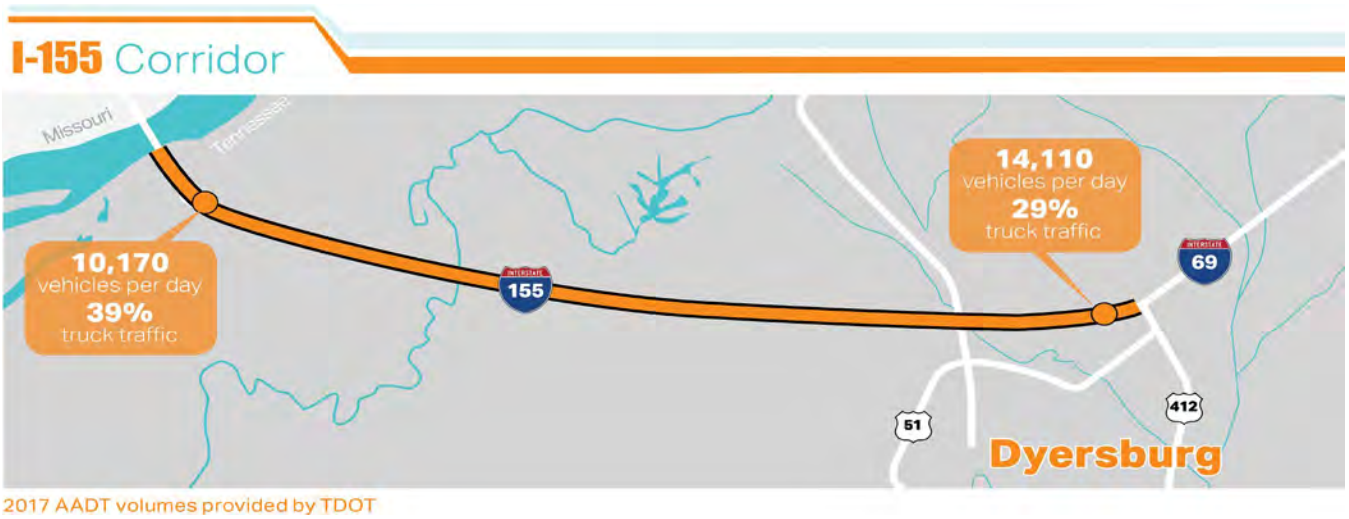
Average annual daily traffic (AADT) volumes, truck traffic counts and American Transportation Research Institute origin-destination freight traffic volumes in the study area were provided by TDOT. 2017 AADT volumes along the I-155 corridor range from 10,170 vehicles per day near the Missouri-Tennessee state line to 14,110 vehicles per day near Dyersburg. Traffic counts are available for other roadway facilities within the study area surrounding I-155. In 2016, truck percentages on I-155 in the study corridor ranged from 29% to 39% of all traffic. Details regarding freight movement in the study area are found in Section 3.5.

Existing Areas of Travel Demand Model Coverage

The I-155 corridor is located entirely within Dyer County. There is no Metropolitan Planning Organization (MPO) in the study area. The study will utilize the Tennessee Statewide Travel Demand Model (TSM) from TDOT to analyze the existing and future travel demand within the study area. In 2016, a new version (3.0) of the TSM was developed making use of various data sources to support ongoing statewide planning and major corridor projects.

For future year related tasks, the analysis will rely on the TSM, plus data from Air Sage, Transearch, Tennessee Roadway Information Management System (TRIMS), National Performance Management Research Data Set (NPMRDS), and HPMS. The Air Sage and Transearch data provide origin-destination traffic volumes for the study area. TRIMS is TDOT's transportation data platform, assembling over 30 years of highway transportation information, including highway data, traffic data, crash data, structure data, pavement data, railroad grade, and crossing data. NPRMDS provides vehicle probe-based speed and travel time for passenger cars and trucks in 5-minute increments on a daily basis. The HPMS is a national level highway information system that includes data on the extent, condition, performance, use, and operating characteristics of the nation's highways.

A preliminary review of existing traffic conditions in the I-155 corridor revealed that congestion occurs during peak travel periods at the US-51/SR-412/SR-78 intersection. Congestion also occurs northeast of Dyersburg due to freight traffic entering and exiting the North Industrial Park.



2017 AADT volumes provided by TDOT

3.2. System Operations and Maintenance

Numerous jurisdictions have responsibilities related to transportation system operations in the I-155 corridor. This section describes the coordination among those jurisdictions and the tools available to them.

Jurisdictions and Coordination

Federal, state and local agencies work together to maintain and operate transportation systems. Operations and maintenance tasks include:

- Emergency management planning
- Facility maintenance
- Signage
- Markings
- Inspections

Coordination of these efforts is undertaken by key agencies, including Tennessee state Regional Operations offices, Maintenance Policy Office, Office of Emergency Management, Environmental Compliance Office, counties, and municipalities.

TDOT's Regional Office in Memphis is responsible for overseeing highway operations and maintenance in western Tennessee (Region 4).

A regional operations office is located in each of Tennessee's four TDOT regions. For the I-155 corridor, the regional operation office in Jackson is responsible for directing operations and maintenance activities, including highway maintenance and repair, bridge inspection and repair, traffic and highway pavement markings, materials and testing, highway beautification, traffic engineering, incident response, and intelligent transportation systems.

In addition to the regional operations office, local maintenance contracts are used on paved surfaces within urban jurisdictions. These contracts are created between TDOT and local jurisdictions, including counties and municipalities, detailing responsibilities for maintenance of state owned roads.

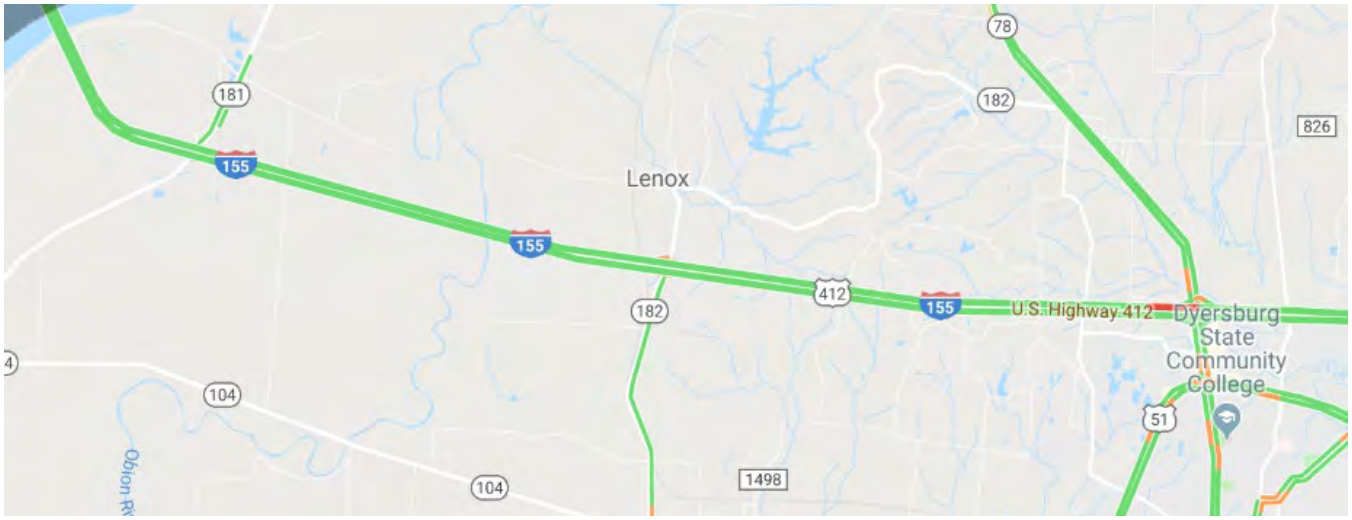
The Maintenance Policy Office at TDOT is responsible for developing and refining the procedural guidelines for field maintenance activities. The office coordinates special maintenance programs such as the Vegetation Management Program. The Maintenance Policy Office works in conjunction with the Environmental Compliance Office on municipal stormwater and other environmental issues. Finally, the Office of Emergency Management works with the Tennessee Emergency Management Agency (TEMA) on emergency preparedness.

ITS Features and Operations

Intelligent Transportation Systems provide information which improves transportation safety, operations, and mobility. TDOT's ITS program, SmartWay, utilizes cameras and sensors to monitor interstate corridors throughout Tennessee. Due to the rural nature of this corridor, no advanced SmartWay technology (e.g. traffic cameras or message boards) is present along the I-155 corridor. The following features are available on the I-155 corridor:

- TN 511 provides traffic information and weather conditions by phone
- SmartWay App provides real-time traffic information

TDOT's SmartWay ITS system is NOT present along the I-155 corridor.



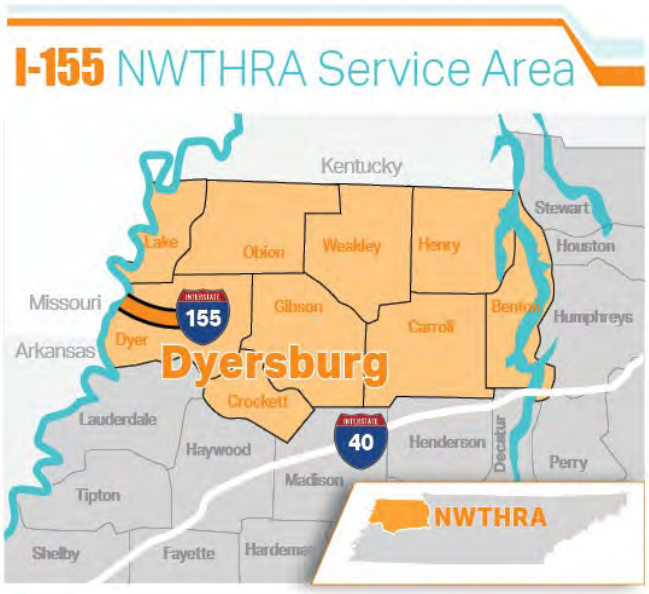
Traffic conditions on I-155 in January 2019 as seen on the SmartWay App.

3.3. Multimodal Facilities and Services

The Tennessee transportation system represents all modes of travel - including walking, biking, and transit services. Each mode plays a vital role in meeting mobility and access needs.

Public Transportation and Transportation Demand Management

The I-155 corridor study area is located in a rural area of Tennessee. Although no fixed route public transit is offered within the corridor area, the Northwest Tennessee Human Resource Agency (NWTHRA) Public Transportation Program offers on-demand service for residents in the area. Fares can be as low as $1.00 round trip and the service will transport riders as far as Memphis, Jackson, and Nashville. Services are offered from 6:00 a.m. to 6:00 p.m. Monday through Friday.



The Northwest Tennessee Human Resource Agency Public Transportationn Program provides access to:

- ☑ Medical facilities
- ☑ Educational facilities
- ☑ Employment sites
- ☑ Shopping centers
- ☑ Other businesses and services

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities exist throughout the State of Tennessee on a variety of scales, including signed bikeways, sidewalks, crosswalks, bicycle lanes, and regional bicycle and pedestrian plans.

Tennessee also has extensive Bicycle Level of Service (BLOS) maps. The BLOS maps include all state routes and rank each according to available shoulder width and amount of traffic. State routes with wider shoulders and lower traffic are given a level of service A, while those with high traffic and narrower shoulders receive lower grades.

Over thirty individual bicycle routes are planned across the entire state. These routes are planned along state routes, linking key resources and cities. Planned state route bicycle routes can be seen in Figure 3-1. Several planned routes run near the I-155 corridor, including the MRT Alternate route. This route, which nearly intersects the I-155 corridor, begins in Dyersburg and runs north-south along SR-51 to Henning. The Kentucky to Alabama West state route runs perpendicular to the I-155 corridor along SR-45E. Finally, the planned Reelfoot Lake to Nashville state route runs parallel to the I-155 corridor in northern Obion County.

Passenger Air and Rail Services

One airport, Dyersburg Regional Airport, is located in the study area, six miles south of I-155, outside of Dyersburg. The Dyersburg Regional Airport is a small airport with one runway. It is not served by any commercial airlines.

In addition to the Dyersburg Regional Airport, the Dyersburg region is also served by passenger rail service as an Amtrak station is located northeast of Dyersburg in Newbern, TN. The Amtrak station, known as Newbern Depot, houses a museum as well as the Amtrak station. The Newbern Depot serves nearby residents of Dyersburg in addition to the greater northwestern Tennessee region, as it is one of three Amtrak stations in Tennessee. Other Tennessee Amtrak stations are located in Nashville and Memphis.

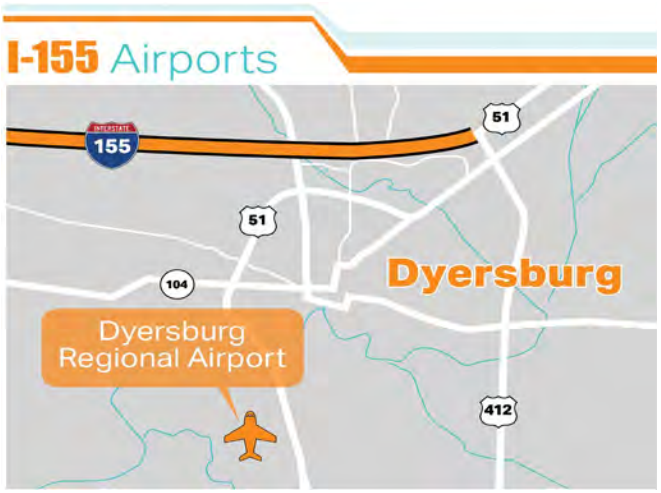
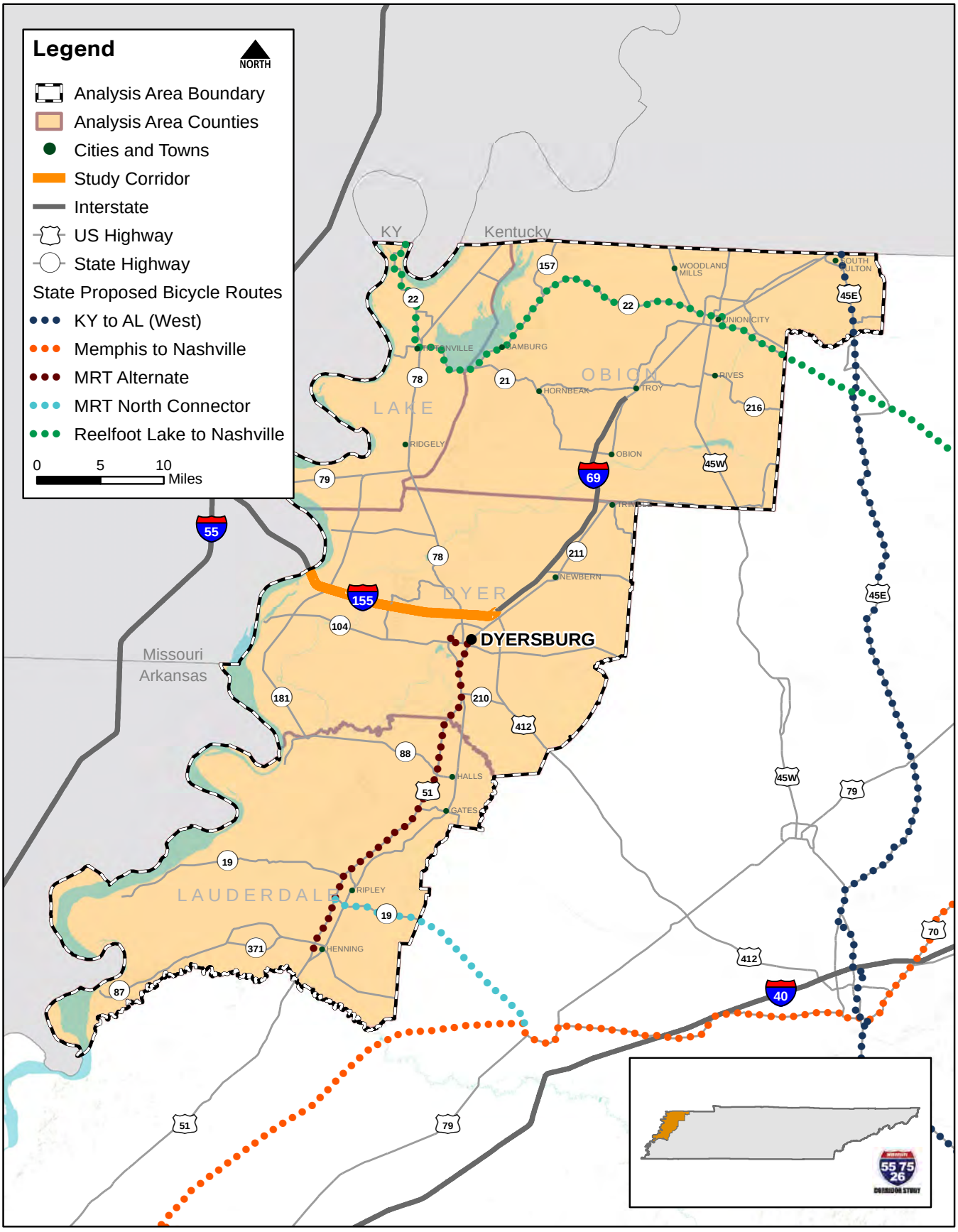


Figure 3-1. I-155 Planned State Route Bicycle Routes



3.4. Safety

Extensive effort is being made by TDOT to improve highway safety statewide through the SmartWay program. However, message boards and cameras providing real time updates to users are not located on the I-155 corridor. By using historical crash data, an analysis of past accidents can help guide development and evaluation of future projects and safety improvements.

Tennessee is working to reduce traffic fatalities as part of the nation's vision Toward Zero Deaths®. This vision is a highway system free of fatalities.

Efforts to improve safety will be evaluated as part of this study. In order to prioritize potential improvements, five-year (2014-2018) crash data will be evaluated along the I-155 corridor. Figure 3-2 shows the corridor's relatively few crashes by density. The highest number of crashes occurred near Dyersburg and in the rural area just east of the Mississippi River. The lack of a crash pattern around interchanges may be due to the rural character of I-155 and lack of congestion.

3.5. Freight Data and Models

Freight movement is an important element of a regional and national economy, as more efficient modes and routes enable improved logistics and result in reduced transportation costs. These cost savings can then be reallocated to growth, providing better jobs and higher wages in the area. The existing and future freight flows in the region will be analyzed using the data sources described in this section as available to TDOT for the I-155 corridor.

Freight generators and facilities along and near the I-155 corridor include:

- The Dyersburg North Industrial Complex
- Canadian National Class I railway
- The shortline railroad TennKen operates from Dyersburg to Hickman, KY and nearby shortline West Tennessee Railroad operates west of Dyersburg
- Grain loading facilities along the Mississippi River
- Tyson's potential food processing plant in Humboldt, TN and related businesses
- Port of Cates Landing north of Dyersburg in Lake County

Tennessee State Data Center

The Tennessee State Data Center includes data such as historical and projected county and metropolitan populations and growth rates. The annual county population projections include the period of 2016-2070. The projections are sourced from the Boyd Center for Business and Economic Research at the University of Tennessee, Knoxville and census data.[1]

Transearch

Transearch is a database for purchase, providing county-level data on freight movements. Provided by IHS Global Insight, it contains data from more than 100 industry, commodity, and proprietary data sources. Freight flows can be analyzed by origin, destination, commodity, and transportation mode. In addition, forecasts for up to 30 years are available. The forecast is based on employment, output, and consumption factors within each county. TDOT has purchased Transearch data for years 2016 and 2045.

Modes include truck, rail, water, and air, and metrics include tonnage, value, and units of shipment. Freight movements including inbound, outbound, through, and intra can be analyzed by county or for 179 economic areas. Volumes are reported for tonnage, units or truck counts, value, vehicle-miles traveled, and ton-miles.

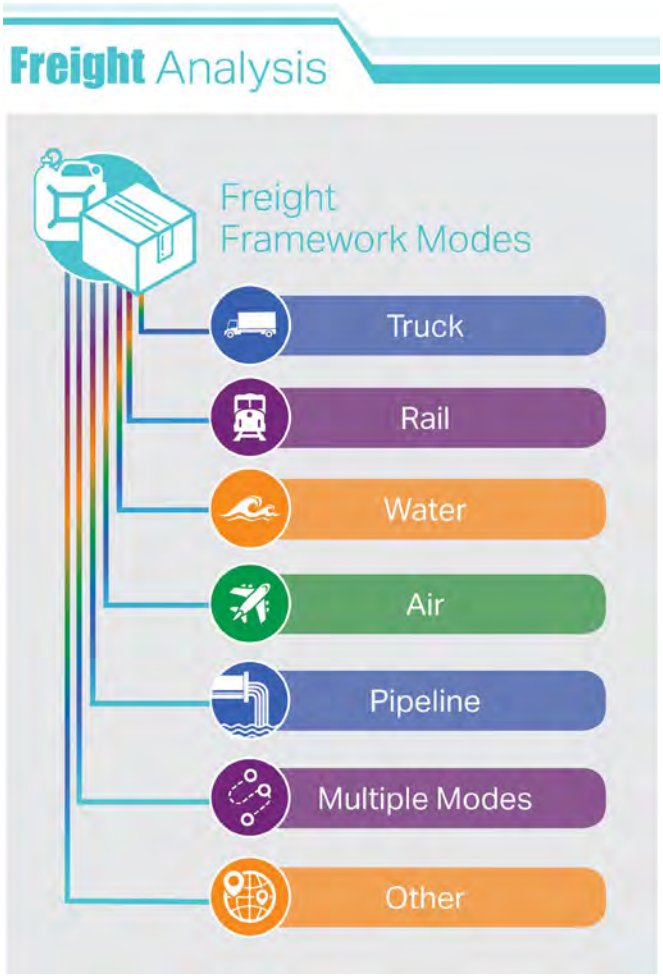
1-The University of Tennessee Knoxville, Tennessee State Data Center, http://tndata.utk.edu/

Of particular relevance to the study is the ability to analyze volumes along individual corridors for over 340 commodities, providing a current and future look at important modes and commodities using the I-155 corridor.

Freight Analysis Framework

The Federal Highway Administration's Freight Analysis Framework (FAF)[2] is a database containing data on value, tonnage, and ton-miles sorted by origin, destination, and commodity type for seven modes of transport: truck, rail, water, air, pipeline, multiple modes, and other/unknown. The freight movements are analyzed by total, domestic, and import or export flows. In addition to annual historical data from 2012-2016, forecasts are included in five-year increments for 2020 through 2045.

Origins and destinations can be specified by one of 123 FAF zones that include states, metropolitan areas, and areas outside of metropolitan areas. Data can be further delineated based on distance bands and the 44 commodity types.



Tennessee Statewide Travel Demand Model

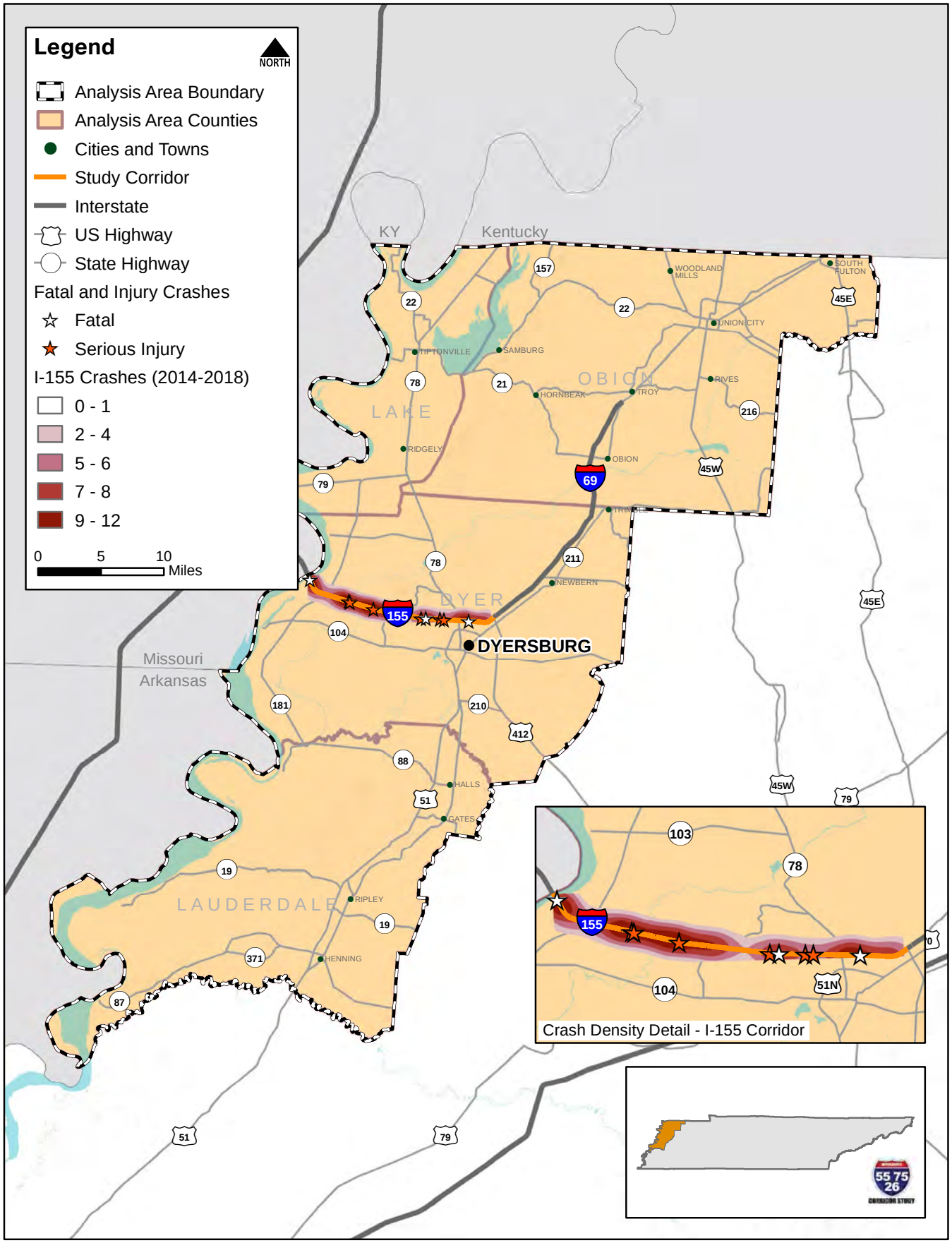
The Tennessee Statewide Travel Demand Model (TSM) includes a commodity flow freight and truck demand model. Origin-designation (OD) data from the American Transportation Research Institute (ATRI), and truck flows from Transearch and FAF (Version 3) were compared to understand which datasets provide the most reliable estimates. ATRI OD patterns and Transearch commodity flows are used and goods are classified using the Standard Classification of Transported Goods (STCG) two-digit codes.

The modes used in the TSM include truck, truck-rail intermodal, carload rail, water, and air. Mode shares are estimated by commodity, distance, TDOT Region, market, and access to modes (port, rail, both, or neither). Payload factors are used to convert freight tons into truck trips and also consider empty truck trips. County employment and socioeconomic data are used to estimate trip generation rates, and annual tonnage productions and attractions are based on 2012 and 2040 Transearch data.

Finally, commercial vehicles are modeled in the quick response truck model and include consideration of three main categories of vehicle: commercial passenger vehicles such as school busses and shuttles; freight vehicles such as mail delivery, trash collection, and parcel pickup/delivery; and services vehicles such as plumbers and utility maintenance services. The TSM shows truck traffic by facility and allows for the testing of new facilities.

2-Freight Analysis Framework Version 4, https://faf.ornl.gov/fafweb/Extraction0.aspx

Figure 3-2. I-155 Crash Map



3.6. Economic Access

Study area population and employment drives travel demand in the I-155 corridor. The locations of economic activity generators and the flows of goods and people between them are a key element in identifying existing and future transportation needs.

Population, Employment, and Demographics

An overview of key demographic data in the study area using information from the Tennessee Statewide Travel Demand Model (TSM) traffic analysis zones (TAZs) and from Woods & Poole Economics, Inc. is shown in Table 3-1. Woods & Poole data for 2010 were used for the population and employment numbers and the TSM (base year 2010) was used for household data.

In 2010, the population of the study area was over 105,600. There were over 40,000 households and study area employment included over 48,000 jobs. Dyer County made up 36 percent of the study area's population, followed by Obion County at 30 percent. Dyer County also was home to 44 percent of the study area employment, followed by Obion County at 33 percent. Figure 3-3 shows population density (people per square mile) in the study area by census tract.

According to OnTheMap, an online analysis tool provided by the US Census Bureau's Center for Economic Studies, there were a total of 12,267 jobs located in Dyersburg in 2015.[3] This accounts for approximately 24 percent of the region's employment. Approximately 2,950 people lived and worked in Dyersburg. The remaining 76 percent of people employed in Dyersburg lived outside of the city. About five percent of those who lived outside of Dyersburg came from Newbern. Approximately two percent each came from Memphis and Ripley. The remaining workers came from other locations around Tennessee.

Environmental Justice Populations

Title VI of the 1964 Civil Rights Act (Title VI) and Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations guide decision making about transportation investments utilizing Federal funding. Under Title VI, no person may be excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the basis of race, color, national origin, age, sex, disability or religion. Executive Order 12898 pertains to Environmental Justice (EJ), which is about identifying and addressing disproportionately high and adverse effects of proposed decisions on minority and low-income populations. TDOT must consider and mitigate environmental, health, social and economic impacts of any Federally-funded transportation projects on these populations.

Minority and low income populations in the study area have been mapped using data from the US Census Bureau's 2012-2016 American Community Survey (ACS). Minority populations are defined as non-white populations. To determine poverty, the US Census Bureau uses a set of money income thresholds that vary by family size and composition. If a family's total income is less than the family's threshold, then that family and every individual in the family is considered in poverty. For example, in 2016, the poverty threshold for an individual was $12,486. The poverty threshold for a family unit of four was $24,755. It should be noted that persons living in poverty represent the most extreme range of the region's low-income population. Persons whose income exceeds the poverty thresholds may also be included in the populations covered by Executive Order 12898.

Table 3-1. 2010 Population, Households, and Employment – I-155

	Population		Households		Employment	
County	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**
Dyer	38,313	36%	15,183	38%	21,340	44%
Lake	7,821	7%	2,270	6%	2,326	5%
Lauderdale	27,742	26%	9,795	24%	8,599	18%
Obion	31,815	30%	13,077	32%	16,073	33%
TOTAL	**105,691**	**100%**	**40,325**	**100%**	**48,338**	**100%**

3-https://onthemap.ces.census.gov/

Figure 3-3. I-155 Population Density

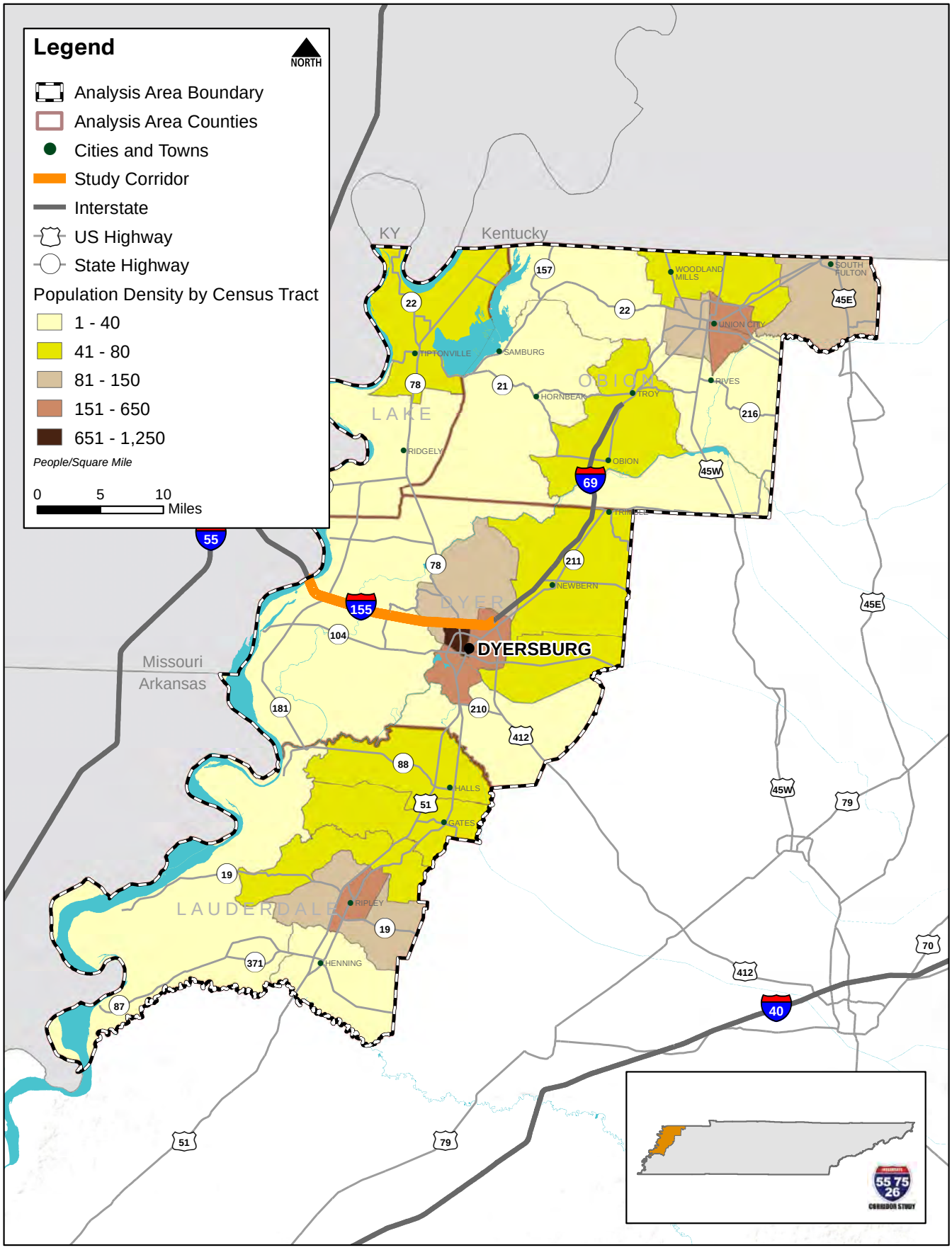


Figure 3-4. I-155 Minority Population

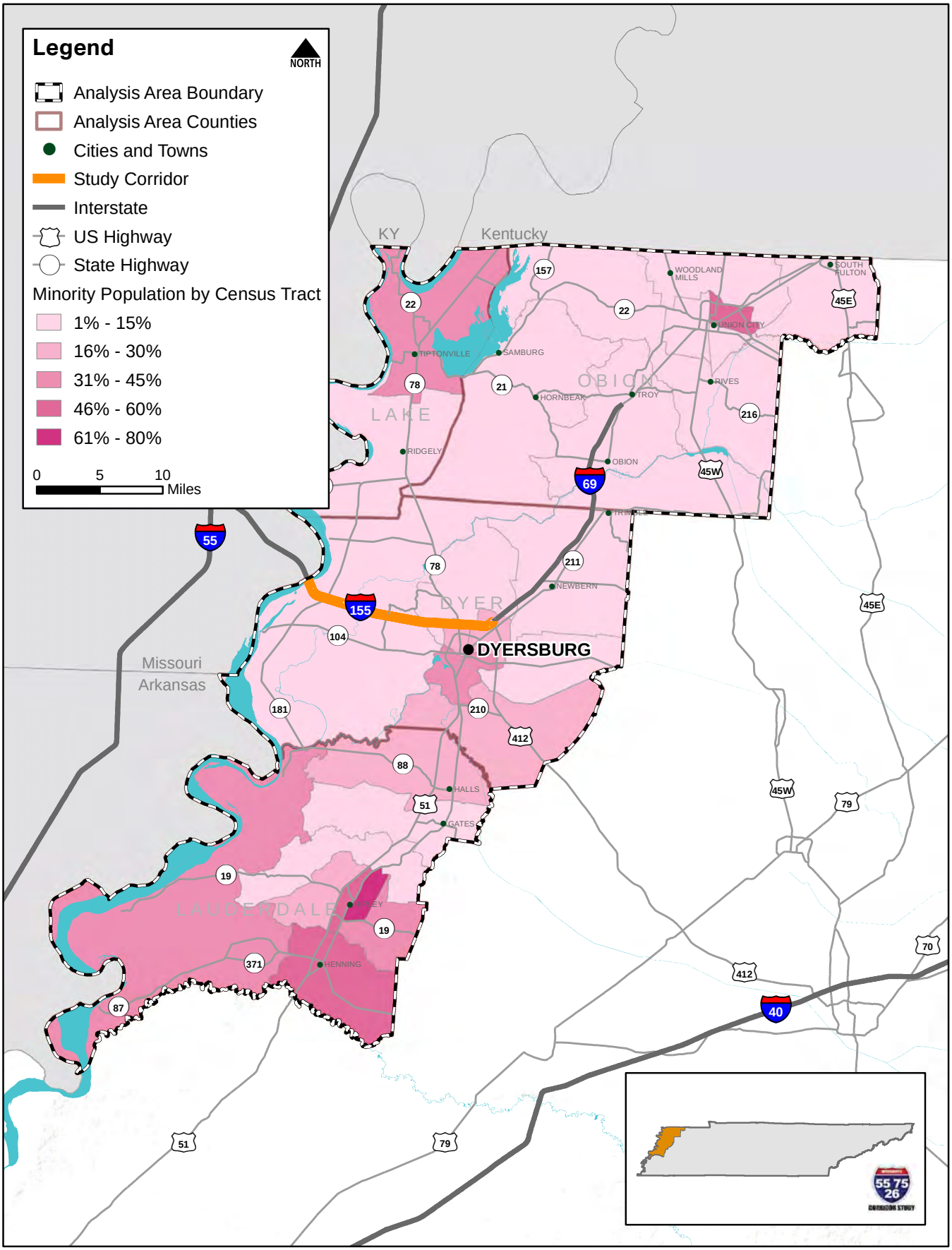
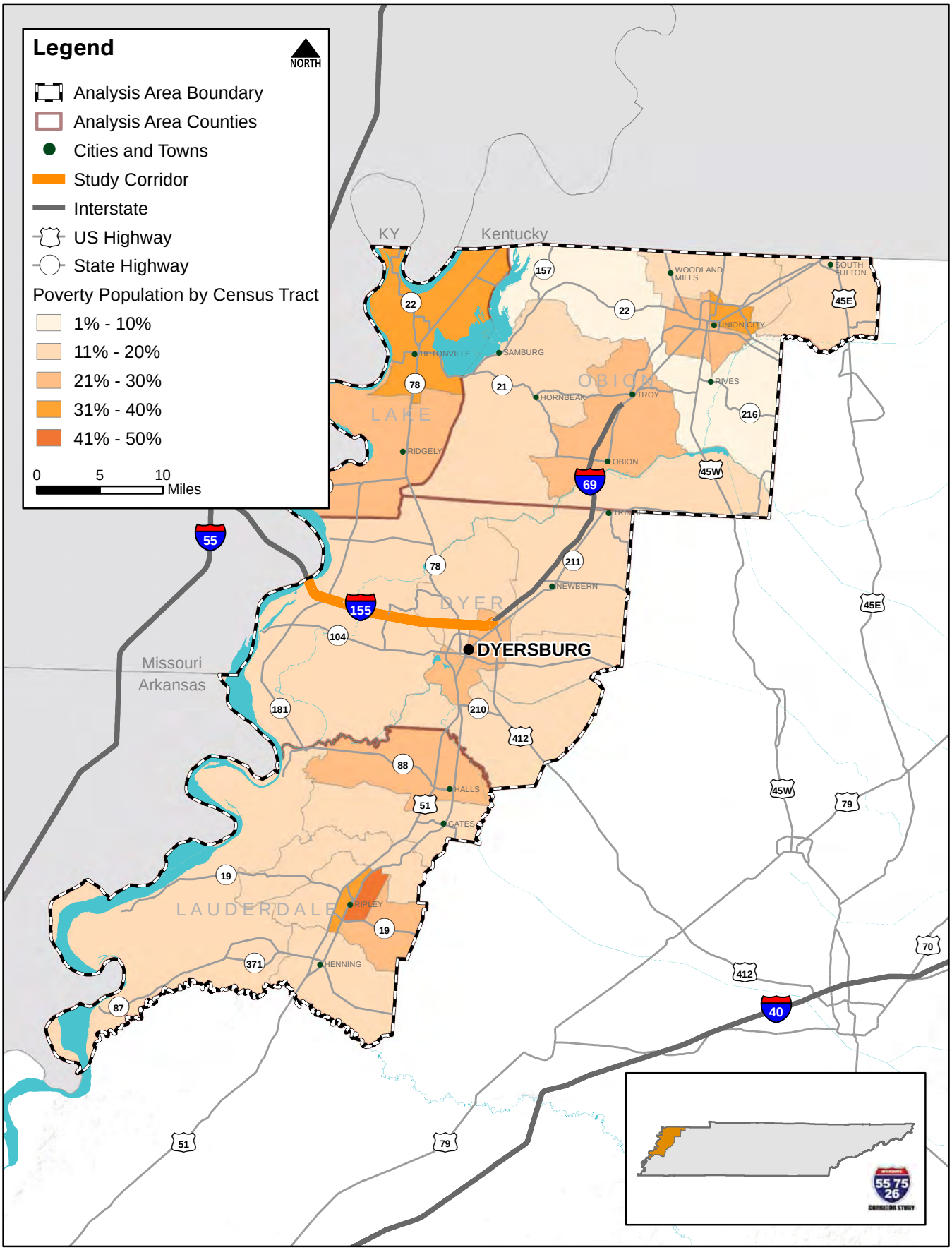


Figure 3-5. I-155 Poverty Population



The ACS data showed the highest concentrations of minorities are found around Ripley, Henning and Union City. The highest concentrations of people in poverty are found around Dyersburg, Ripley, Union City, and in much of Lake County. Figures 3-4 and 3-5 show percentages of minority and poverty populations by census tract.

3.7. Land Use

Land use, development patterns, and geographical and cultural features of the study area impact the demand for, design, and operations of transportation facilities. This section describes those factors in the I-155 corridor and the data used to assess them in relation to potential transportation system improvements.

Land Use and Development

The I-155 corridor extends approximately 16 miles through the westernmost portion of Dyer County just north of Dyersburg. The study area includes four adjacent counties as well: Obion, Lake, and Lauderdale. A high-level review of existing land use, plans, and policies was conducted to characterize study area development. In addition, this review identified areas where major residential, commercial, or industrial growth is planned.

Parcel-level land use data were collected from the Tennessee Comptroller of the Treasury's Office for counties surrounding the I-155 corridor. Land uses in the study area are shown in Figure 3-6. The study area includes mostly agricultural land uses as well as some commercial uses near the SR-78 (Lake Road) interchange.

Table 3-2 shows the distribution of land use within the four-county study area as well as within Dyer County. Land use composition is relatively uniform across the study area counties, with most parcels classified as agricultural. Reelfoot Lake and the Reelfoot National Wildlife Refuge in Lake County represent a relatively large area of public/semi-public land in the northwestern portion of the study area.

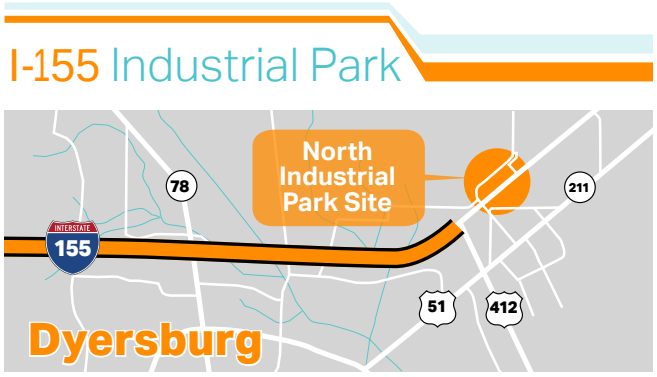
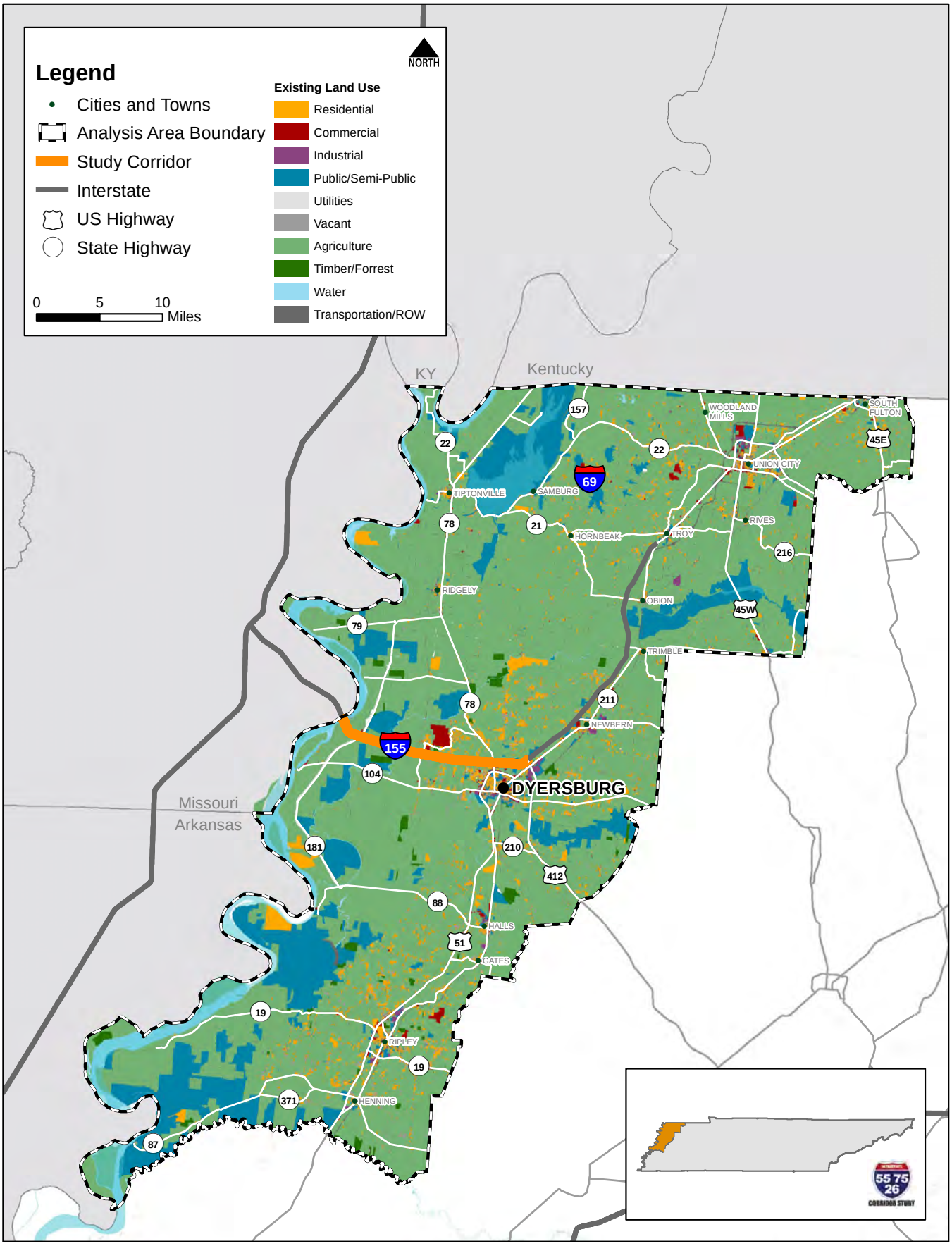


Table 3-2. Existing Land Use – I-155

Land Use Category	4-County Study Area ~1,133,000 acres	Dyer County ~331,000 acres
Residential	4%	5%
Commercial	1%	1%
Industrial	<1%	<1%
Public/Semi-Public	13%	8%
Agricultural/Timber	75%	78%
Utilities/ Transportation/ Vacant	3%	4%
Water	3%	3%

Figure 3-6. I-155 Existing Land Use



Neither Dyer County or Dyersburg has developed a comprehensive plan, land use plan, or transportation plan to guide desired growth and development. Moderate development is anticipated along the entire corridor, with industrial growth concentrated near the eastern terminus of the freeway, centered on the Dyersburg North Industrial Park.[4]

Environmental Features: Wetlands

Wetlands are important natural resources across the state and benefit Tennessee ecologically, socially, and economically. They provide habitat for plants and wildlife, recharge groundwater, provide clean drinking water, support recreational activities, and reduce flooding. Proposed improvements should avoid wetlands when possible and minimize or mitigate impacts when avoidance is not possible.

The US Fish and Wildlife Service (USFWS) is the federal agency that provides wetland information to the public. The latest wetlands database (updated May 2018) was obtained from the USFWS National Wetlands Inventory (NWI) for the entire state of Tennessee. For the purpose of this planning level study, this database is sufficient to draw general conclusions about avoiding or minimizing impacts to these resources; however, additional field surveying would be necessary for design activities.

Wetlands (shown in blue) are adjacent to the I-155 corridor.

Cultural Features: Historic Resources

Historic resources are important to the state and must be avoided when possible. Historic resources are sites, buildings and structures that are significant in American history. Preserving these resources is beneficial to a community's culture and local economy. Tennessee has a rich history that can be witnessed and studied through its historic structures and places.

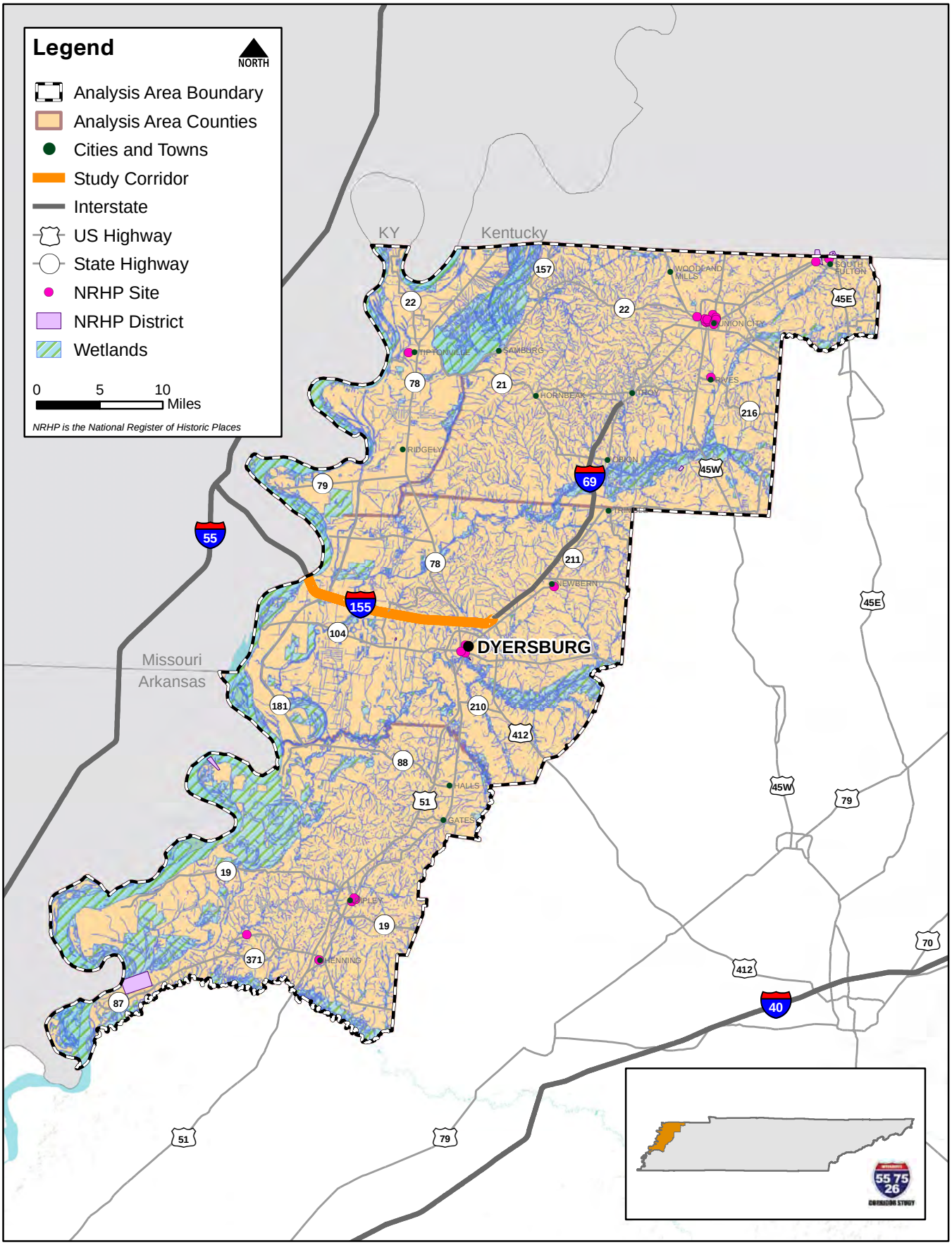
The US National Park Service is the agency that houses the National Register of Historic Places (NRHP), the official list of the country's historic places worthy of preservation. The State of Tennessee also has a list of state-owned historic resources, which is maintained by the Tennessee Historical Commission. This commission is the State Historic Preservation Office (SHPO) for Tennessee. A review of the historical commission's state historic sites list indicated there is one state historic site listed in the I-155 corridor study area. The Alex Haley House in Henning, Tennessee (Lauderdale County) is listed as a state historic site. For the purpose of this planning level study, this information is sufficient; however, additional field surveying would be necessary for design activities. Figure 3-7 shows wetlands and historic resources data for the I-155 corridor study area.

The nearest NRHP sites are located in Dyersburg. None of these sites are directly adjacent to the corridor.

The Alex Haley House, located in Henning, is the only state historic site in the study area.
Photo credit: Miles2GoBeforeISleep.com

4-Stakeholder Advisory Committee survey, 2018

Figure 3-7. I-155 Wetlands and Historic Features



4. Forecast Future Conditions

As a long-range plan to guide future investments in the transportation system, this study relies not only on an analysis of existing conditions in the I-155 corridor, but evaluates forecasted future conditions. Population and employment growth will affect transportation demand in the future, and planned transportation improvements will alter the operations of the system. This section documents data used to understand potential future conditions in the corridor.

4.1. Population and Employment Growth

Socioeconomic data projections prepared for the Tennessee Statewide Travel Demand Model (TSM) and from Woods & Poole were examined to determine population, household and employment growth for 2020, 2030, and 2040. Population and employment data are from Woods & Poole, while household data are from the TSM. Table 4-1 shows the projected population, household, and employment within the study area. Figures 4-1, 4-2 and 4-3 show population, household, and employment changes in the study area from 2010 to 2040.

By 2040, the analysis area is projected to decline in population by one percent from approximately 105,700 people to 104,400 people. Dyer County is projected to have the largest increase in population (three percent) and employment (19 percent) from 2010 to 2040. Lake County is projected to have the largest increase in households (67 percent) from 2010 to 2040. Population, households, and employment are projected to remain about the same or slightly decrease in Obion County in 2040.

4.2. Planned Transportation Projects

There is no Metropolitan Planning Organization within the four-county study area. The TDOT State Transportation Improvement Program (STIP) was reviewed to identify planned and programmed projects along the I-155 study corridor. No planned improvement projects were identified.

Table 4-1. Population, Households, and Employment (2020, 2030, 2040) – I-155

2020	Population			Households			Employment		
County	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010
Dyer	38,184	37%	-0.5%	15,893	37%	5%	22,479	46%	5%
Lake	7,572	7%	-3%	2,775	7%	22%	2,339	5%	0.5%
Lauderdale	27,032	26%	-3%	10,644	25%	9%	9,148	19%	6%
Obion	30,665	30%	-4%	13,072	31%	0%	14,517	30%	-10%
TOTAL	**103,453**	**100%**	**-2%**	**42,384**	**100%**	**5%**	**48,483**	**100%**	**0.5%**

2030	Population			Households			Employment		
County	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010
Dyer	39,198	37%	2%	16,615	37%	9%	24,100	47%	13%
Lake	7,563	7%	-3%	3,284	7%	45%	2,356	5%	1%
Lauderdale	27,546	26%	-1%	11,500	26%	17%	9,697	19%	13%
Obion	30,725	30%	-3%	13,078	29%	0%	14,737	29%	-8%
TOTAL	**105,032**	**100%**	**-6%**	**44,477**	**100%**	**10%**	**50,890**	**100%**	**5%**

2040	Population			Households			Employment		
County	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010
Dyer	39,391	38%	3%	17,343	37%	14%	25,451	48%	19%
Lake	7,394	7%	-5%	3,795	8%	67%	2,347	5%	1%
Lauderdale	27,479	26%	-1%	12,366	27%	26%	10,088	19%	17%
Obion	30,135	29%	-5%	13,090	28%	0%	14,713	28%	-8%
TOTAL	**104,399**	**100%**	**-1%**	**46,594**	**100%**	**16%**	**52,599**	**100%**	**8%**

Figure 4-1. I-155 Change in Population (2010 to 2040)

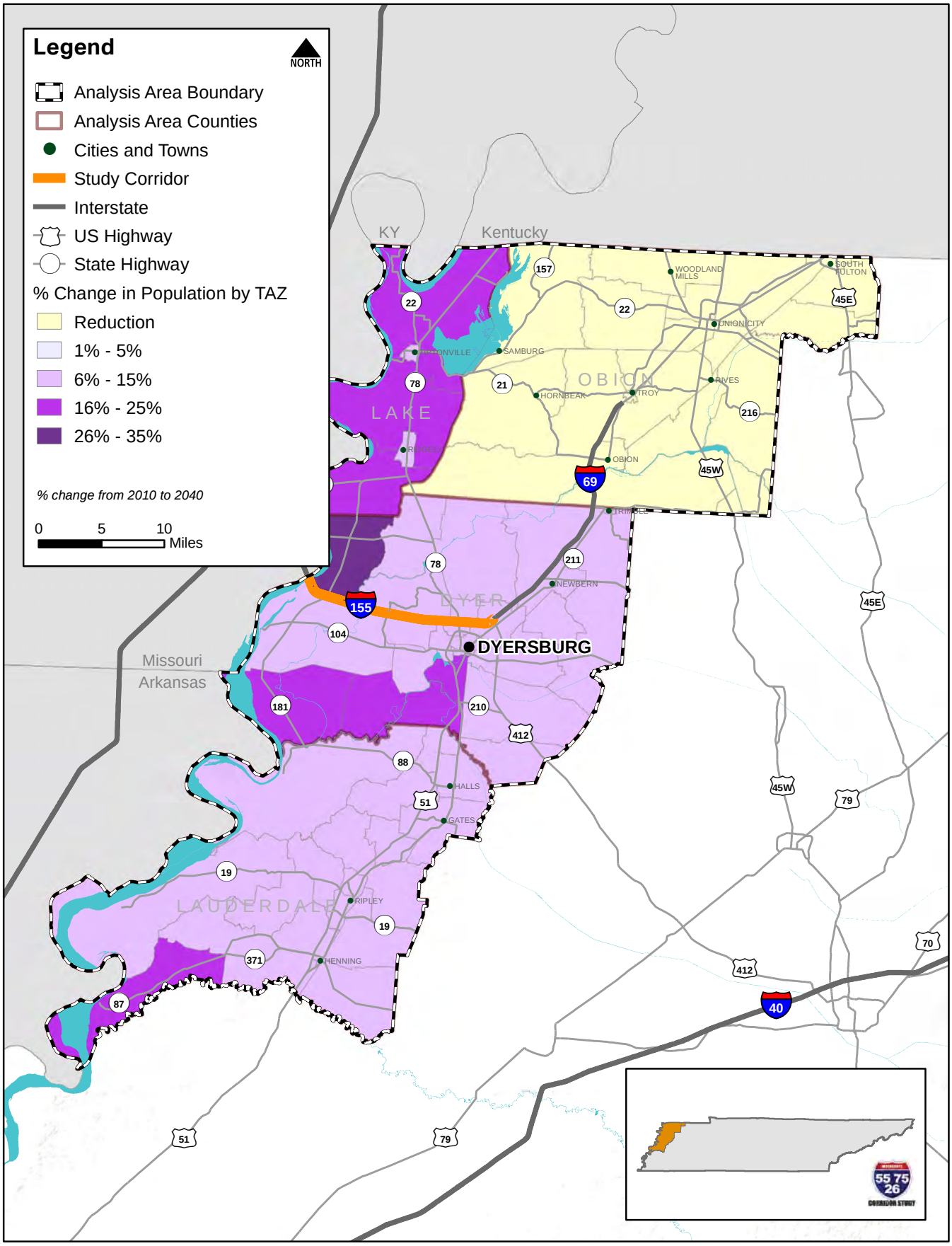


Figure 4-2. I-155 Change in Number of Households (2010 to 2040)

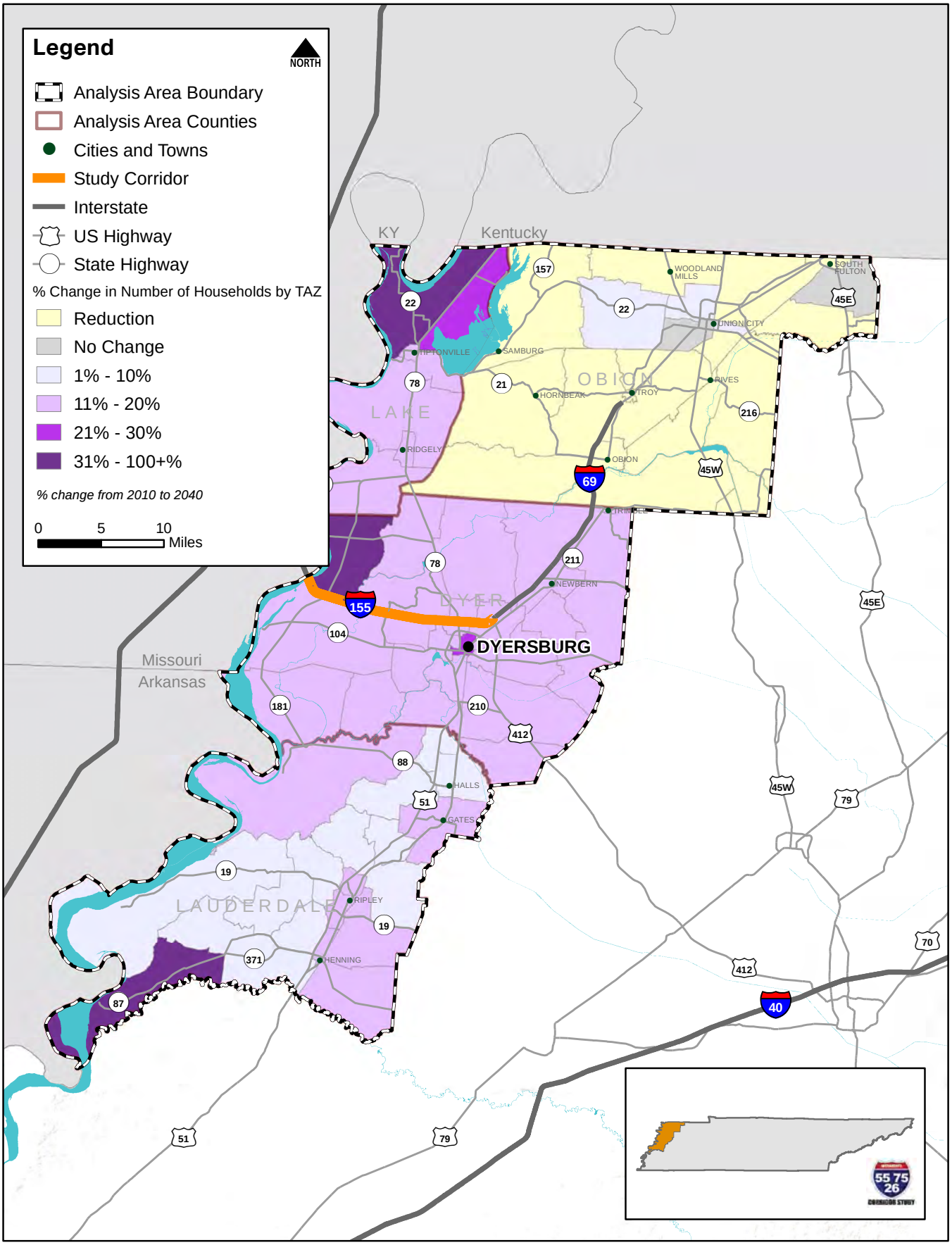
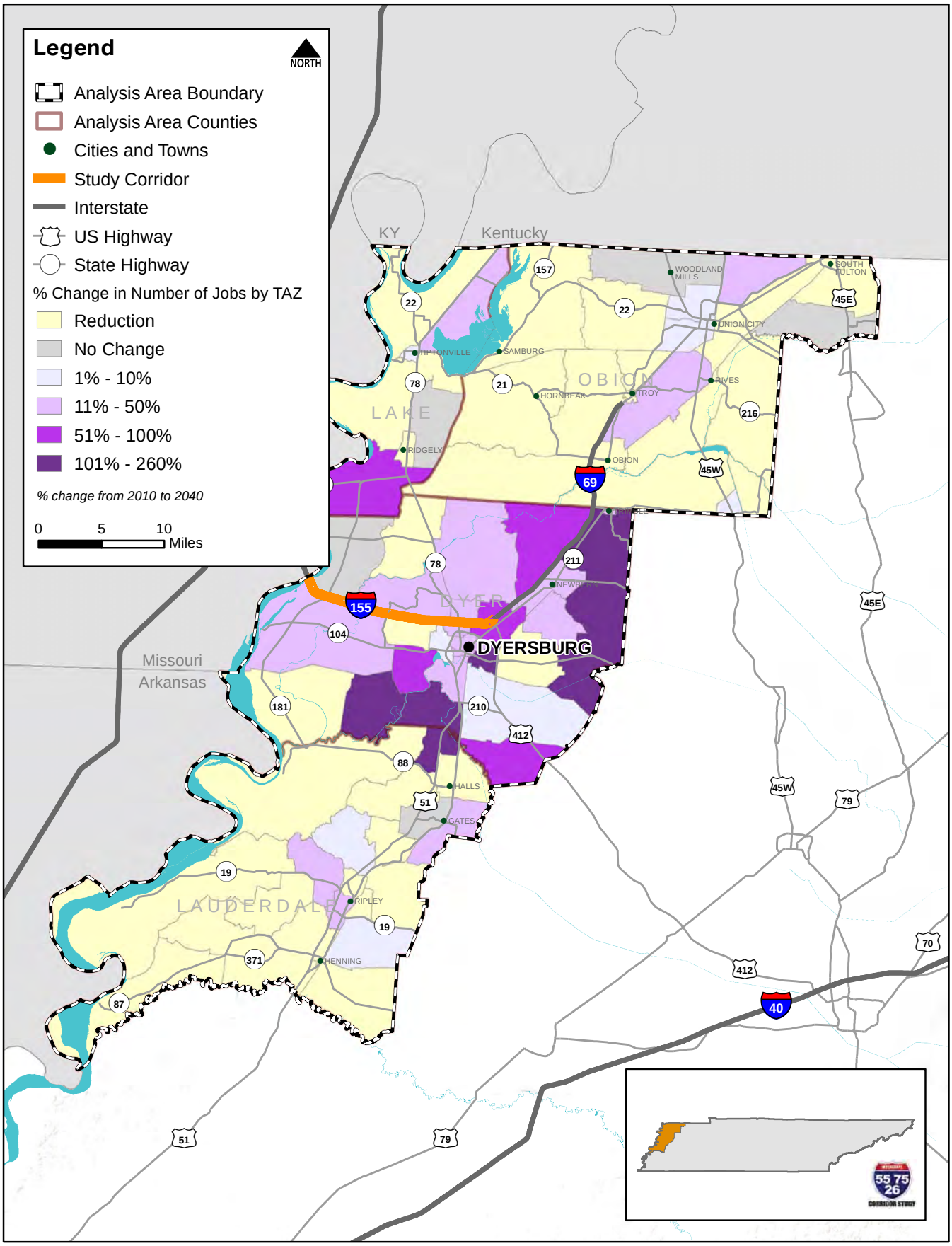


Figure 4-3. I-155 Change in Number of Jobs (2010 to 2040)



I-75 Corridor

▶ Corridor Data and Information Inventory

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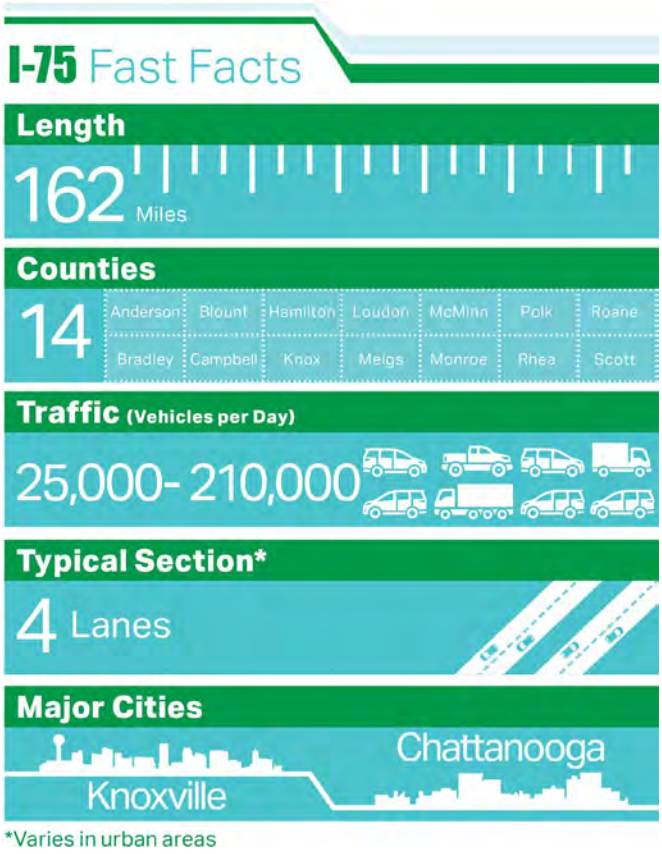
I-75 Corridor

1. Introduction

The I-75 Corridor Data and Information Inventory describes data used to develop and evaluate multimodal transportation improvement options for the I-75 in southwestern Tennessee. This corridor was studied as part of a larger corridor study that includes I-55, I-26, and I-155 in addition to I-75. Interstate 75 is a major north-south route connecting Miami, Florida to Sault Ste. Marie, Michigan at the Canadian border. The length of the Tennessee portion of the I-75 corridor is approximately 162 miles, beginning in Jellico at the Kentucky/Tennessee border and terminating at the Georgia/Tennessee border in Chattanooga. The corridor traverses two large metropolitan areas: Knoxville and Chattanooga.

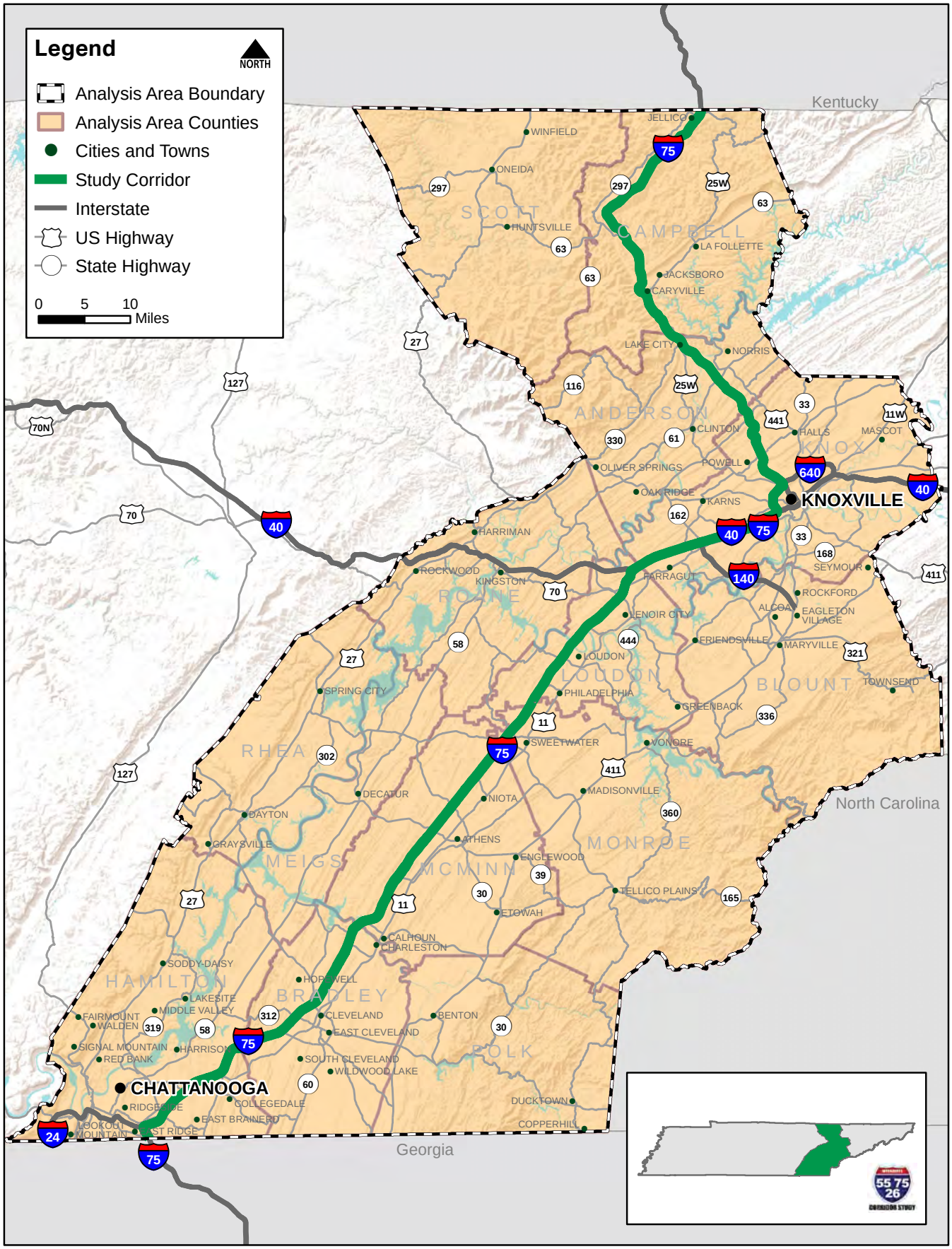
The project analysis area is shown in Figure 1-1; it includes Anderson, Blount, Bradley, Campbell, Hamilton, Knox, Loudon, McMinn, Meigs, Monroe, Polk, Rhea, Roane, and Scott counties.

The main purpose of this study is to identify existing and emerging deficiencies along the I-75 corridor and to evaluate and prioritize improvements to address those deficiencies. The study will consider innovative approaches to explore the multimodal issues and opportunities available to the Tennessee Department of Transportation (TDOT) to address capacity and congestion, enhance operational efficiency, improve safety and security, expand transportation choices, and support economic growth and competitiveness. This memo documents the data gathered to support study analysis. It includes information about existing transportation facilities and their operations, corridor demographic and economic conditions (and forecasted changes in those conditions), and planned improvement projects. Where applicable, it provides snapshots of existing conditions across these factors.



The I-75 corridor is being studied as part of a larger corridor study that also includes I-55, I-155, and I-26.

Figure 1-1. I-75 Corridor Study Area



2. Previous and Current Studies

Many agencies have conducted studies and developed a variety of plans for the I-75 study area. These studies focus on all modes of transportation and various levels of infrastructure, from statewide and regional to community-specific. Key studies, plans, and programs were reviewed to develop an understanding of the corridor and the needs and opportunities that have been previously identified. The TDOT State Transportation Improvement Program (STIP), Cleveland, Knoxville, and Chattanooga MPO Long Range Transportation Plans (LRTP), and Transportation Improvement Programs (TIP) were reviewed to identify projects and studies in the vicinity of the I-75 study corridor. See Section 4.2 for a summary of these projects.

TDOT Plans

1. Tennessee Statewide Multimodal Freight Plan (2018)
2. Region 2 Incident Management Plan (2017)
3. State Transportation Improvement Program, 2017-2020 (2016)
4. 25-Year Long Range Transportation Policy Plan (2015)
5. State of Tennessee Strategic Highway Safety Plan (2014)
6. I-75 Corridor Feasibility Study (2010)

Knoxville Regional TPO Plans

1. Freight Movement Plan (in progress)
2. 2040 Mobility Plan (2017)
3. 2017-2020 Transportation Improvement Program (2016)
4. Human Services Transportation Coordination Plan (2013)
5. Transit Corridor Study (2013)
6. Regional ITS Architecture & Deployment Plan (2012)
7. Knoxville Area Transit (KAT) Transit Development Plan (2009)
8. East Tennessee Household Travel Survey (2008)

Chattanooga-Hamilton TPO Plans

1. Regional ITS Architecture & Deployment Plan (2017)
2. 2030 Comprehensive Plan (2016)
3. 2040 Regional Transportation Plan (2013)
4. Development Trends in Hamilton County (2010)
5. Brainerd Town Center Plan Assessment (2006)

Cleveland Area MPO Plans

1. Connect Cleveland Walkability Action Plan (2017)
2. Regional ITS Architecture & Deployment Plan (2017)
3. 2017-2020 Transportation Improvement Program (2016)
4. 2040 Regional Transportation Plan (2016)
5. Bicycle & Pedestrain Plan (2008)

3. Existing Data and Information

This section summarizes the transportation, demographic, land use, economic, and other data compiled for this study. When applicable, it presents snapshots of existing conditions in the I-75 corridor.

3.1 Transportation Capacity, Travel Demand, and Congestion

Available existing data and information were compiled to evaluate current and projected roadway capacity, demand, and congestion in the I-75 study corridor.

Existing Highway Network

Highway Performance Monitoring System (HPMS) data was obtained from TDOT. The data included road names, cardinal direction headings, functional class, ownership, and traffic volumes. TDOT also provided Transearch data, which included highway and rail network geometrics, such as number of lanes and rail owner and classification. Intelligent Transportation Systems (ITS) facilities and resources were also provided by TDOT. In addition, the US Census 2010 Geographic Information System files for all streets in the study area were obtained to supplement local road information.

Existing Travel Volumes

Average annual daily traffic (AADT) volumes, truck traffic counts and American Transportation Research Institute origin-destination freight traffic volumes in the study area were provided by TDOT. 2017 AADT volumes along the I-75 corridor range from 24,830 vehicles per day south of the Kentucky-Tennessee state line to 210,410 vehicles per day in Knoxville. Traffic counts are available for other roadway facilities within the study area surrounding I-75. In 2017, truck percentages on I-75 in the study corridor ranged from 10% - 36% of all traffic. Details regarding freight movement in the study area are found in Section 3.5.

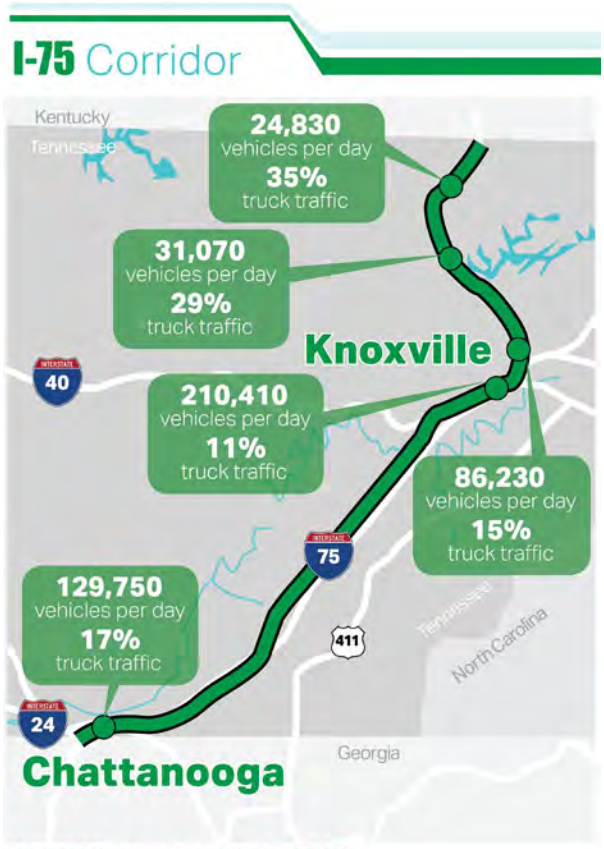
Existing Areas of Travel Demand Model Coverage

The I-75 study corridor traverses 14 counties -- Hamilton, Loudon, Blount, Roane, Knox, Bradley, Anderson, Campbell, McMinn, Monroe, Rhea, Meigs, Polk, and Scott -- and three Metropolitan Planning Organization (MPO) areas, including Knoxville, Cleveland and Chattanooga. Each of the MPOs have developed their own travel demand models to estimate future travel demand and traffic conditions, and the data cover seven counties in Tennessee: Hamilton, Loudon, Blount, Roane, Knox, Bradley, and Anderson.

The following seven counties fall outside of the MPOs' limits: Campbell, McMinn, Monroe, Rhea, Meigs, Polk, and Scott. TDOT has also developed a statewide model that includes the areas contained in the MPO regions. Based on similiar comparisons between the Tennessee Statewide Travel Demand Model (TSM) and the outputs from the regional models, TDOT and MPO staff agreed to utilize the TSM to analyze the existing and future travel demand within the study area. Figure 3-1 displays the TSM coverage for the study area.

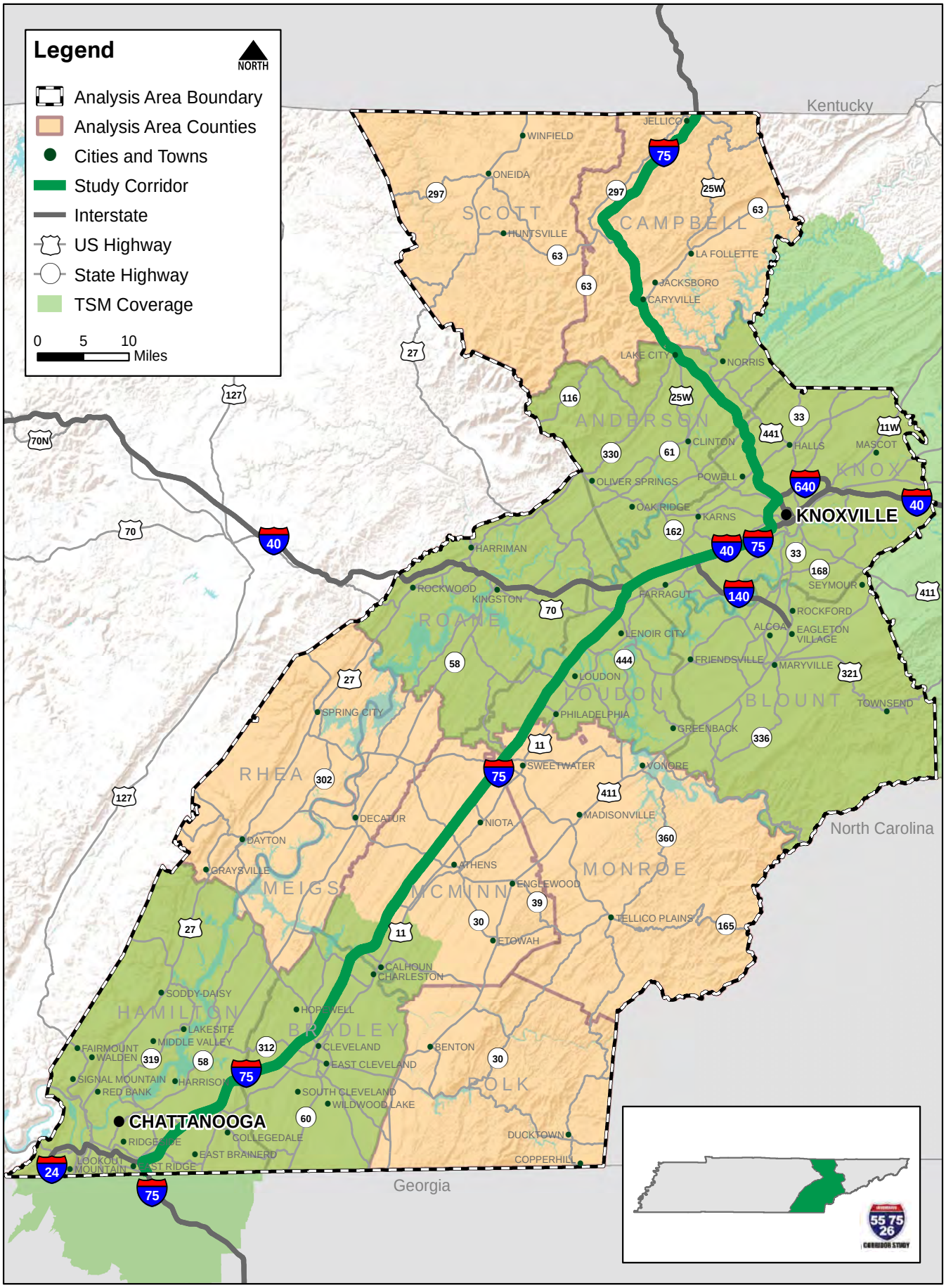
For future year related tasks, the analysis will rely on the TDMs plus data from Air Sage, Transearch, Tennessee Roadway Information Management System (TRIMS), National Performance Management Research Data Set (NPMRDS), and HPMS. The Air Sage and Transearch data provide origin-destination traffic volumes for the study area. TRIMS is TDOT's transportation data platform, assembling over 30 years of highway transportation information, including highway data, traffic data, crash data, structure data, pavement data, railroad grade, and crossing data. NPRMDS provides vehicle probe-based speed and travel time for passenger cars and trucks in 5-minute increments on a daily basis. The HPMS is a national level highway information system that includes data on the extent, condition, performance, use, and operating characteristics of the nation's highways.

Several areas of chronic congestion exist along the study corridor. The interchanges of I-75/I-640 in Knoxville and I-75/I-24 near Chattanooga are very congested during the morning and evening peak hours.



2017 AADT volumes provided by TDOT

Figure 3-1. I-75 TSM Coverage Area



3.2. System Operations and Maintenance

Numerous jurisdictions have responsibilities related to transportation system operations in the I-75 corridor. This section describes the coordination among those jurisdictions and the tools available to them.

Jurisdictions and Coordination

Federal, state and local agencies work together to maintain and operate transportation systems. Operations and maintenance tasks include;

- Emergency management planning
- Facility maintenance
- Signage
- Markings
- Inspections

Coordination of these efforts is undertaken by key agencies, including Tennessee state Regional Operations offices, Maintenance Policy Office, Office of Emergency Management, Environmental Compliance Office, counties, and municipalities.

A regional operations office is located in each of Tennessee's four TDOT regions. For the I-75 corridor, the regional operation offices in Knoxville and Chattanooga are responsible for directing operations and maintenance activities, including highway maintenance and repair, bridge inspection and repair, traffic and highway pavement markings, materials and testing, highway beautification, traffic engineering, incident response, and intelligent transportation systems.

In addition to the regional operations office, local maintenance contracts are used on paved surfaces within urban jurisdictions. These contracts are created between TDOT and local jurisdictions, including counties and municipalities, detailing responsibilities for maintenance of state owned roads.

The Maintenance Policy Office at TDOT is responsible for developing and refining the procedural guidelines for field maintenance activities. The office coordinates special maintenance programs such as the Vegetation Management Program. The Maintenance Policy Office works in conjunction with the Environmental Compliance Office on municipal stormwater and other environmental issues. Finally, the Office of Emergency Management works with the Tennessee Emergency Management Agency (TEMA) on emergency preparedness.

ITS Features and Operations

Intelligent Transportation Systems provide information which improves transportation safety, operations, and mobility. TDOT's ITS program, SmartWay, utilizes cameras and sensors to monitor interstate corridors throughout Tennessee. SmartWay dynamic message signs provide traffic information and travel times to users. Components of the ITS SmartWay system include:

- Cameras that monitor freeways, providing improved incident management
- Radar and video detection that calculate travel times and monitor traffic flow
- Roadway traffic sensors that report traffic counts, speeds, and travel times
- Dynamic Message Signs (DMS) to communicate traffic information, travel times, and key messages to motorists
- Traffic Management Centers (TMCs) located in Memphis, Nashville, Chattanooga, and Knoxville
- HELP freeway service to reduce congestion by removing minor incidents quickly
- TN 511 provides traffic information and weather conditions by phone
- SmartWay App provides real-time traffic information
- Fiber-optic and wireless communications connecting all elements of the system

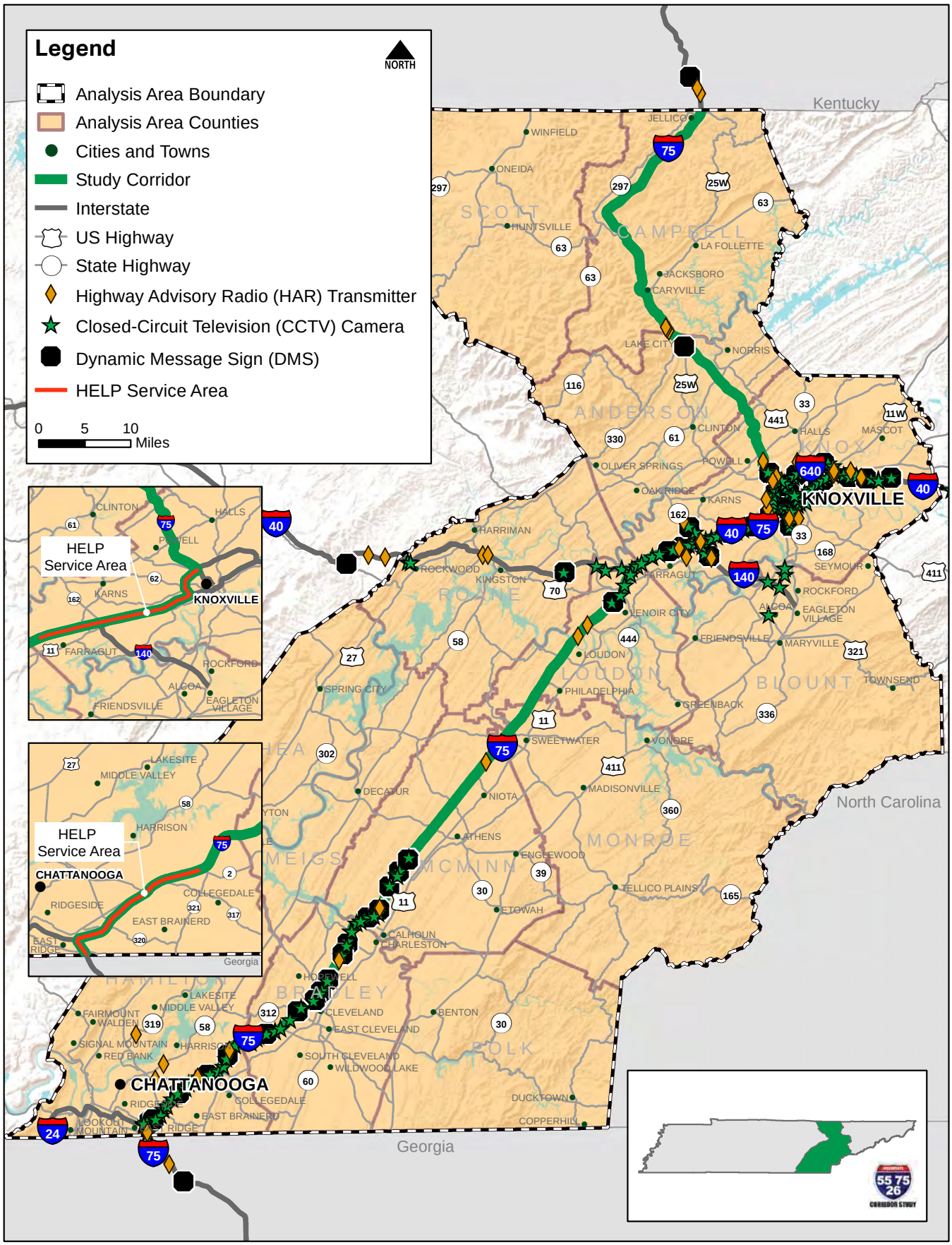
SmartWay technology can be found on I-75 in the study area. Currently, the I-75 corridor contains 81 cameras, 140 speed detectors, and 26 DMS. The current ITS system coverage of I-75 can be seen in Figure 3-2.

Table 3-1. ITS Resources – I-75

ITS Resource	Count
TMC Operators*	41
HELP Operators*	34
HELP Vehicles*	40
IT Technicians*	5
Interstate Miles (SmartWay)	112
Closed Circuit Television (CCTV) Cameras	81
Speed Detectors	140
Dynamic Message Signs (DMS)	26
HIghway Advisory Radio (HAR) Transmitters	8
HAR Signs w/Beacons	12

*Applies to greater Knoxville area, not just I-75

Figure 3-2. I-75 SmartWay Map



In 1993 a fog detection and warning system was implemented along I-75 near Calhoun, Tennessee just north of Cleveland.[1] This sytem includes a three-mile fog detection area spanning north and south of the Hiwassee River and an eight-mile warning zone on each approach to the fog-prone area. In 2006, a project was initiated to upgrade the original system to current technology. The fog detection system is comprised of nine foward-scatter visability sensors, 14 microwave radar vehicle detectors, and 21 Closed Caption Television (CCTV) cameras. Data from these devices is transmitted by buried fiber optic cable to an on-site control center. Information from the on-site control center is relayed to a central computer located in the Highway Patrol office in Tiftonia, Tennessee with the use of a T1 communication link.

3.3. Multimodal Facilities and Services

The Tennessee transportation system represents all modes of travel -- including walking, biking, and transit services -- each playing a vital role in meeting mobility and access needs.

Public Transportation and Transportation Demand Management

Existing public transportation in the I-75 study area includes fixed route bus service, Downtown Trolley and Shuttle services, and on demand paratransit services. Despite the diversity of services available along the corridor, public transportation is limited to a few select areas of the corridor where population densities exist to support these services. Larger cities including Chattanooga, Knoxville, and Cleveland all have separate transit agencies that provide fixed route services in the I-75 study area (see Figure 3-3).

Two Chattanooga transit routes operate on I-75.

The Knoxville Area Transit (KAT) offers several different transportation services to visitors and residents, including a free trolley service, fixed bus routes and paratransit. The free trolley service has three routes in the downtown Knoxville area and runs Monday-Saturday. Knoxville Area Transit bus service offers 23 routes and over 1,500 stops, reaching 80% of Knoxville residents (within ½ mile radius).[2] While several of KAT's 23 routes cross I-75, none travels directly on the I-75 corridor. Bus trips cost $1.50 per ride, not including transfers. Finally, Knoxville Area Transit offers a paratransit service known as LIFT. LIFT is a door-to-door service that costs $3 per trip for eligible participants.

The Chattanooga Area Regional Transit Authority (CARTA) offers 16 fixed route bus routes throughout the city of Chattanooga and into the surrounding area. Of the 16 fixed bus routes operated by CARTA, two routes travel on the I-75 corridor including:

- Route 3: Enterprise South
- Route 6: East Brainerd (Dial-a-Ride Route)

Along with the fixed routes, Chattanooga offers two, dial-a-ride routes that offer half hour service from neighborhoods to the nearby commercial centers and the airport. Bus trips are $1.50 per ride. In addition to the traditional bus services, CARTA offers a downtown shuttle, operated by electric vehicles. The downtown shuttle is free to users and runs daily from the downtown entertainment district to the Tennessee Aquarium every five minutes. Finally, CARTA offers a paratransit service known as CARTA's Care-A-Van. Paratransit rides are $2.50 one-way, $5 roundtrip for eligible participants.

The Cleveland Urban Area Transit System (CUATS) offers five fixed bus routes throughout the City of Cleveland. The buses run Monday-Friday; each route has one bus running at a time and begins its route every hour on the hour. Fares for bus routes are $1.00 per ride, including transfers.

Two park and ride lots are adjacent to I-75 in Chattanooga.

In addition to public transit options, the I-75 corridor has numerous park and ride lots, most notably in areas of high population around Chattanooga and Knoxville (see Figure 3-4). In the Chattanooga region, the Chattanooga Area Regional Transportation Authority manages several lots.[3] These lots serve commuters heading into the city who can drop off their car and ride a bus downtown or carpool. Of these lots, two (East Ridge and Concord Baptist Church) are located right off I-75. In addition to park and ride lots managed by CARTA, one park and ride lot exists in the Knoxville area in Farragut, TN. The Knoxville park and ride lot is located on N. Campbell Station Rd, exit 373 on the I-40/I-75 corridor southwest of Knoxville.[4] All of the park and ride lots along I-75 are marked spaces within a larger parking lot including businesses and churches.

1-USDOT Federal Highway Administration Road Weather Management Program
2-Knoxville Area Transit. November 13, 2018. https://www.katbus.com/172/Bus-Routes
3- Chattanooga Area Regional Transportation Authority. December 1, 2018. http://www.carta-bus.org/alt-flash/services.php#parknride
4- Tennessee Department of Transportation. I-40/I-81 Corridor Feasibility Study. Task 2.0: Assessment of Deficiencies Technical Memorandum. August 2007.

Figure 3-3. I-75 Transit Routes

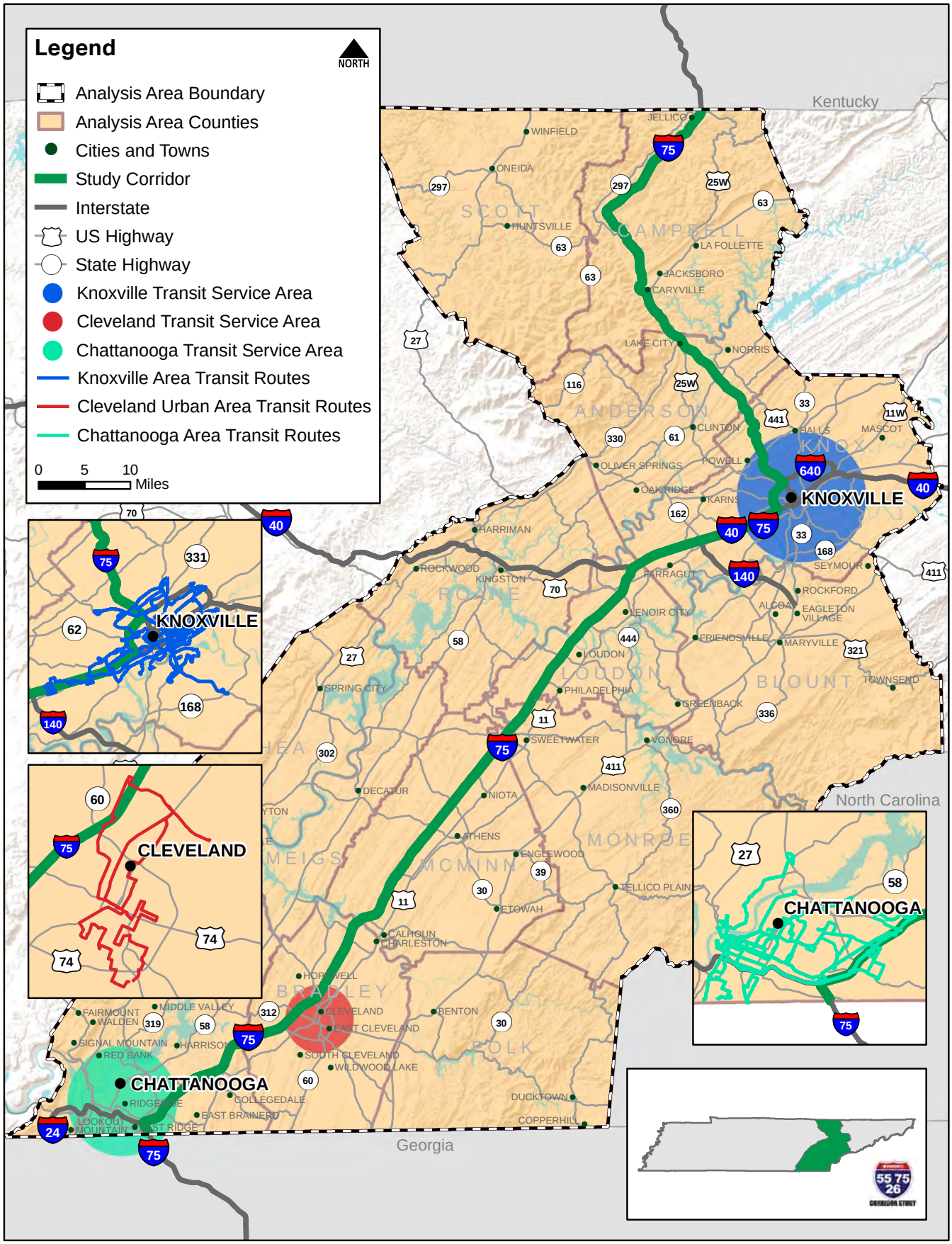


Figure 3-4. I-75 Park and Ride Lots

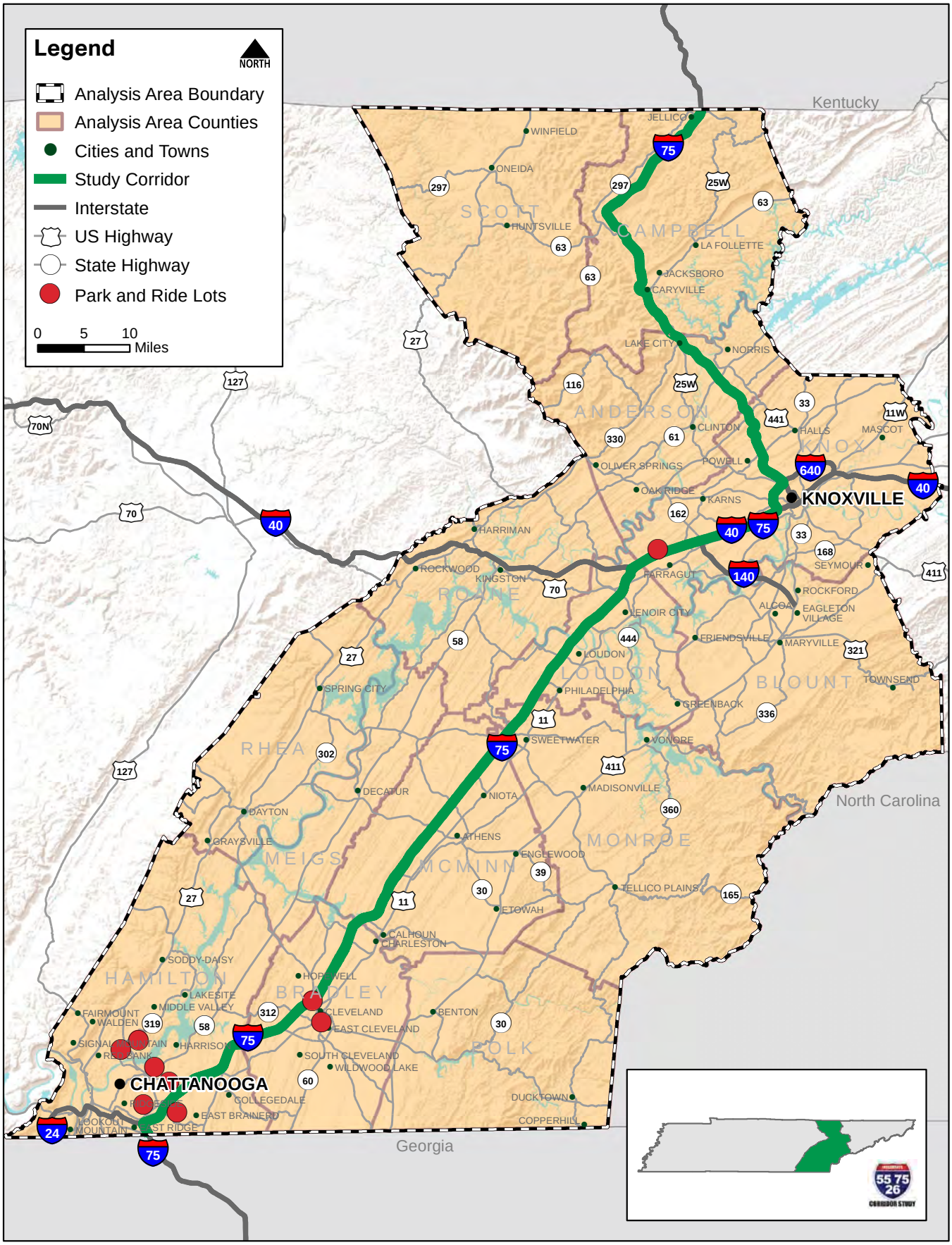
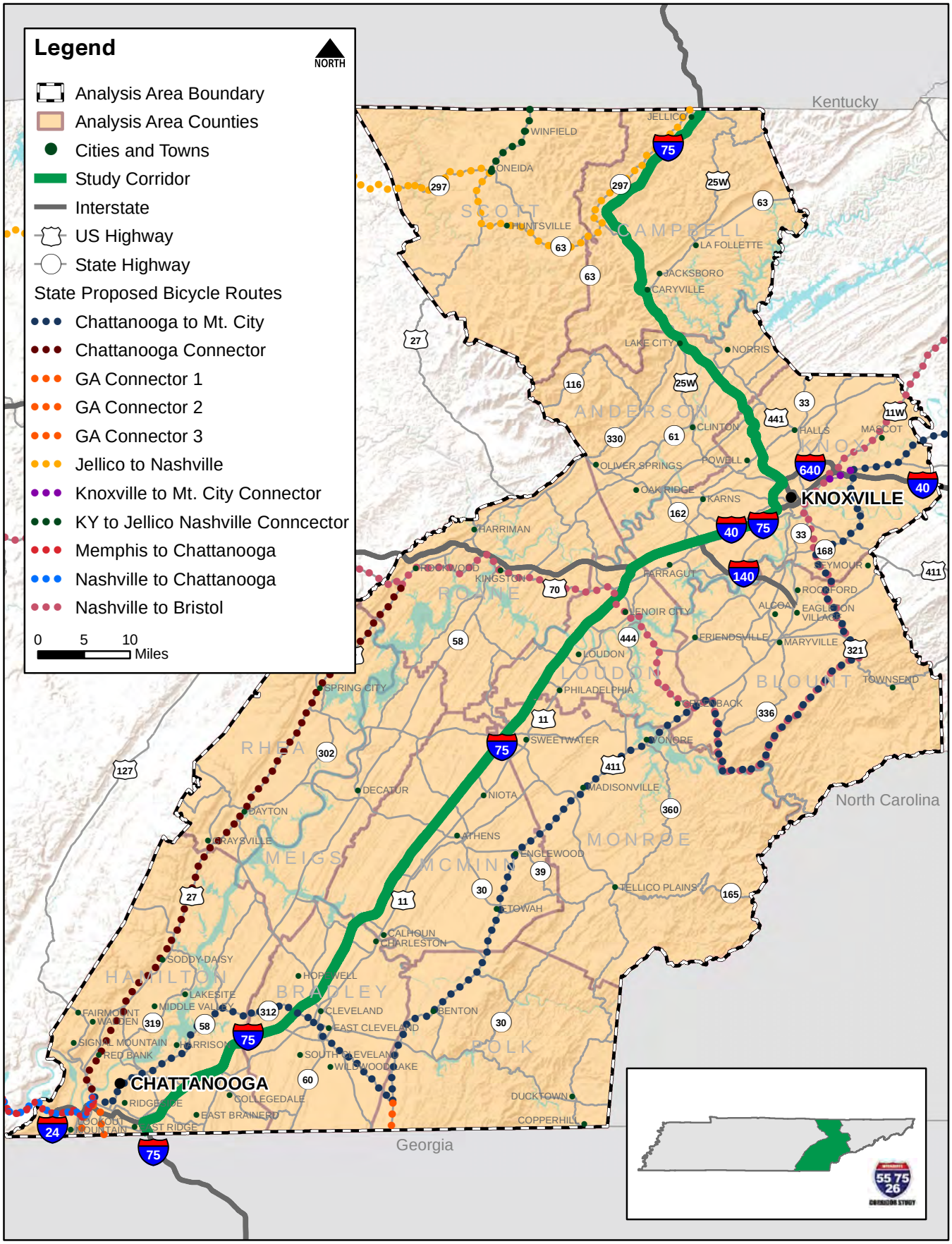


Figure 3-5. I-75 Planned State Route Bicycle Routes

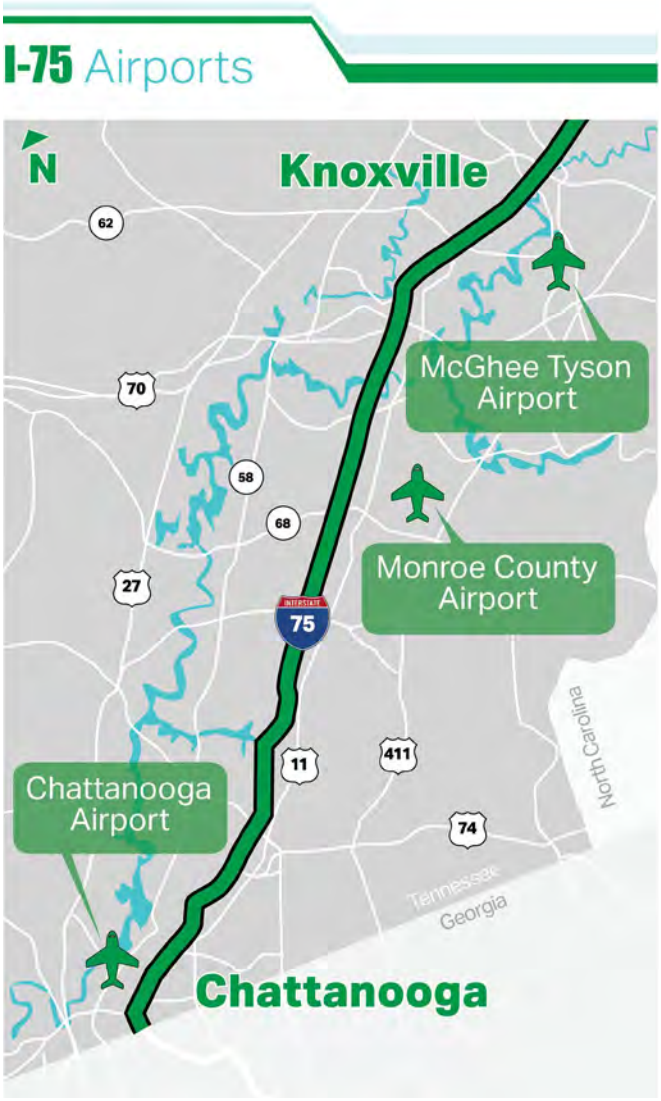


Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities exist throughout the State of Tennessee on a variety of scales, including signed bikeways, sidewalks, crosswalks, bicycle lanes, and regional bicycle and pedestrian plans.

Tennessee also has extensive Bicycle Level of Service (BLOS) maps. The BLOS maps include all state routes and rank each according to available shoulder width and amount of traffic. State routes with wider shoulders and lower traffic are given a level of service A, while those with high traffic and narrower shoulders receive lower grades.

Over thirty individual bicycle routes are planned across the entire state. These routes are planned along state routes, linking key resources and cities. Planned state route bicycle routes can be seen in Figure 3-3. Several planned routes run parallel to the I-75 corridor. These routes include the Chattanooga to Mountain City route and the Chattanooga connector route. Other routes such as the Nashville to Bristol route and the Jellico to Nashville intersect the I-75 corridor.



Passenger Air and Rail Services

Three airports are located along the I-75 corridor, including the Chattanooga Airport, McGhee Tyson Airport, and the Monroe County Airport. The McGhee Tyson Airport (TYS) is a public and military airport; it is served by several major airlines, and employs nearly 3,000 people.[5] The airport has two runways and is located south of Knoxville and south of the I-75 corridor. Nearly 2 million passengers went through the airport in 2017.[6] The Chattanooga Airport (CHA) is located a few miles east of Chattanooga and located just west of the I-75 corridor. The airport has two runways and is served by several major airlines. Finally, the Monroe County Airport (MNV), the smallest of the three with only one runway is located a few miles east of the I-75 corridor in Madisonville, TN. None of the airports is accessed directly from I-75.

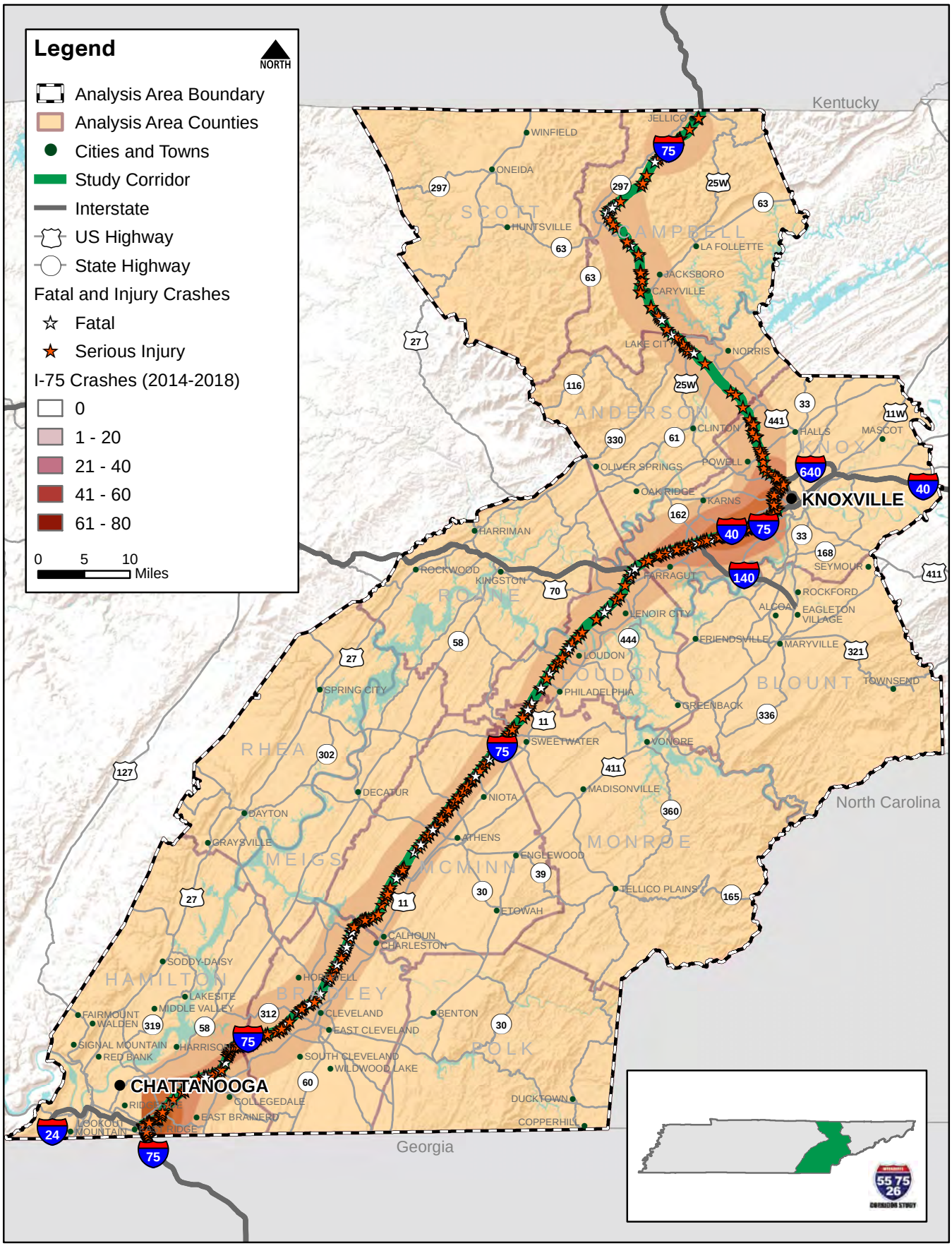
Currently, no fixed rail transit services exist within the I-75 study area.

3.4. Safety

Extensive effort is being made by TDOT to improve highway safety through the SmartWay program. As noted, this program provides traffic data to users through message boards in addition to offering HELP freeway service patrols (see Figure 3.2 for HELP service areas). Still, crashes do occur along interstate corridors, particularly in areas of congestion.

5- https://web.archive.org/web/20121215025001/http:/www.tys.org/about-us
6-https://flyknoxville.com/wp-content/uploads/2015/10/Dec-2017-Stats.pdf

Figure 3-6. I-75 Crash Map



Tennessee is working to reduce traffic fatalities as part of the nation's vision Toward Zero Deaths®. This vision is a highway system free of fatalities.

Efforts to improve safety will be evaluated as part of this study. In order to prioritize potential improvement, five-year (2014-2018) crash data will be evaluated along the I-75 corridor. Figure 3-6 shows corridor crashes by density. The highest number of crashes have occurred near freeway interchanges, including I-40 in the Knoxville area and I-24 in Chattanooga. There are also noticeably more crashes between Knoxville and Chattanooga, compared to the northern end of the I-75 corridor. Projects with the potential to improve operational safety to at these locations will be prioritized accordingly.

3.5. Freight Data and Models

Freight movement is an important element of a regional and national economy, as more efficient modes and routes enable improved logistics and result in reduced transportation costs. The existing and future freight flows in the region will be analyzed using the data sources described in this section as available to TDOT for the I-75 corridor. In addition to freight flow analysis, consideration will be given to truck parking. Truck parking data will be analyzed as available from TDOT. Currently, a truck parking study is being performed to identify existing utilization and need for truck parking.

Tennessee State Data Center

The Tennessee State Data Center includes data such as historical and projected county and metropolitan populations and growth rates. The annual county population projections include the period of 2016-2070. The projections are sourced from the Boyd Center for Business and Economic Research at the University of Tennessee, Knoxville and census data.[7]

Transearch

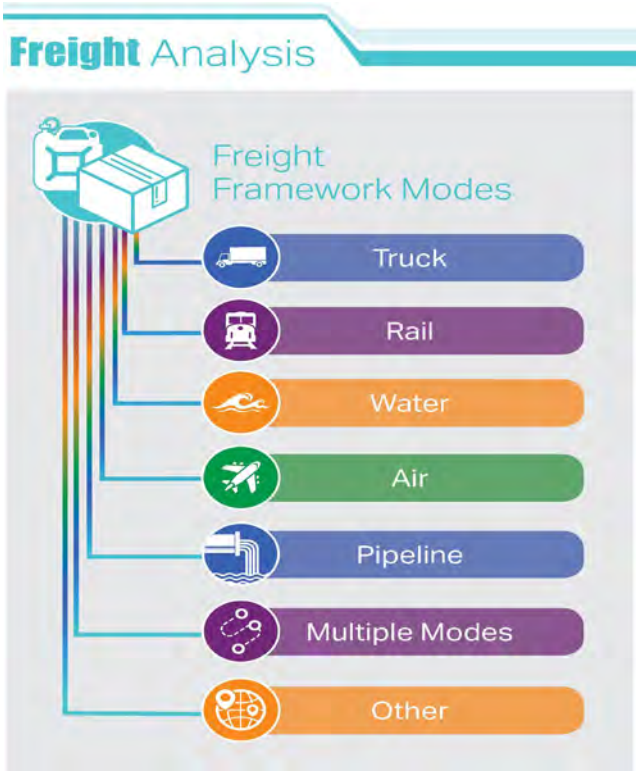
Transearch is a database for purchase, providing county-level data on freight movements. Provided by IHS Global Insight, it contains data from more than 100 industry, commodity, and proprietary data sources. Freight flows can be analyzed by origin, destination, commodity, and transportation mode. In addition, forecasts for up to 30 years are available. The forecast is based on employment, output, and consumption factors within each county. TDOT has purchased Transearch data for years 2016 and 2045. Modes include truck, rail, water, and air, and metrics include tonnage, value, and units of shipment. Freight movements including inbound, outbound, through, and intra can be analyzed by county or for 179 economic areas. Volumes are reported for tonnage, units or truck counts, value, vehicle-miles traveled, and ton-miles.

Of particular relevance to the study is the ability to analyze volumes along individual corridors for over 340 commodities, providing a current and future look at modes and commodities using the I-75 corridor.

Freight Analysis Framework

The Federal Highway Administration's Freight Analysis Framework (FAF)[8] is a database containing data on value, tonnage, and ton-miles sorted by origin, destination, and commodity type for seven modes of transport: truck, rail, water, air, pipeline, multiple modes, and other/unknown. The freight movements are analyzed by total, domestic, and import or export flows. In addition to annual historical data from 2012-2016, forecasts are included in five-year increments for 2020 through 2045.

Origins and destinations can be specified by one of 123 FAF zones that include states, metropolitan areas, and areas outside of metropolitan areas. Data can be further delineated based on distance bands and the 44 commodity types.



7- The University of Tennessee Knoxville, Tennessee State Data Center, http://tndata.utk.edu/
8- Freight Analysis Framework Version 4, https://faf.ornl.gov/fafweb/Extraction0.aspx

Tennessee Statewide Travel Demand Model

The Tennessee Statewide Travel Demand Model (TSM) includes a commodity flow freight and truck demand model. Origin-designation (OD) data from the American Transportation Research Institute (ATRI), and truck flows from Transearch and FAF (Version 3) were compared to understand which datasets provide the most reliable estimates. ATRI OD patterns and Transearch commodity flows are used and goods are classified using the Standard Classification of Transported Goods (STCG) two-digit codes.

The modes used in the TSM include truck, truck-rail intermodal, carload rail, water, and air. Mode shares are estimated by commodity, distance, TDOT Region, market, and access to modes (port, rail, both, or neither). Payload factors are used to convert freight tons into truck trips and also consider empty truck trips. County employment and socioeconomic data are used to estimate trip generation rates, and annual tonnage productions and attractions are based on 2012 and 2040 Transearch data.

Finally, commercial vehicles are modeled in the quick response truck model and include consideration of three main categories of vehicle: commercial passenger vehicles such as school busses and shuttles; freight vehicles such as mail delivery, trash collection, and parcel pickup/delivery; and services vehicles such as plumbers and utility maintenance services. The TSM shows truck traffic by facility and allows for the testing of new facilities.

3.6. Economic Access

Study area population and employment drives travel demand in the I-75 corridor. The locations of economic activity generators and the flows of goods and people between them are a key element in identifying existing and future transportation needs.

Population, Employment and, Demographics

An overview of key demographic data in the study area using information from the Tennessee Statewide Travel Demand Model (TSM) traffic analysis zones (TAZs) and from Woods & Poole Economics, Inc. is shown in Table 3-2. Woods & Poole data for 2010 were used for the population and employment numbers and the TSM (base year 2010) was used for household data.

In 2010, the analysis area had a population of over 1,390,000 people. There were over 561,800 households and over 802,100 people in the analysis area were employed. Knox County made up 31 percent of the analysis area's population, followed by Hamilton County at 24 percent. Knox County also made up 36 percent of the analysis area employment followed by Hamilton County at 29 percent. Figures 3-7 and 3-8 show population density (people per square mile) in the study area by census tract.

According to OnTheMap, an online analysis tool provided by the US Census Bureau's Center for Economic Studies, there were a total of 172,533 people employed in Knoxville in 2015.[9] This accounts for approximately 24 percent of the region's share of employment. Approximately 41,800 people both lived and worked in Knoxville. Almost 76 percent of the people employed in Knoxville lived outside of Knoxville. About two percent of those who lived outside of Knoxville but worked in Knoxville came from Farragut. Another two percent came from Maryville, and about two percent came from Nashville. The remaining workers came from other locations around Tennessee.

A total of 168,264 people were employed in Chattanooga in 2015. This accounts for about 29 percent of the region's share of employment. Approximately 49,000 people lived and worked in Chattanooga. The remaining 71 percent of people employed in Chattanooga lived outside of Chattanooga. About four percent of workers came from East Ridge. Approximately two percent of workers each came from Red Bank, Soddy-Daisy, Cleveland, Middle Valley, and Nashville. The remaining workers came from other locations around Tennessee and Georgia.

In 2010, the analysis area had a population of over 1,390,000 people.

Environmental Justice Populations

Title VI of the 1964 Civil Rights Act (Title VI) and Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations guide decision making about transportation investments utilizing Federal funding. Under Title VI, no person may be excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the basis of race, color, national origin, age, sex, disability or religion. Executive Order 12898 pertains to Environmental Justice (EJ), which is about identifying and addressing disproportionately high and adverse effects of proposed decisions on minority and low-income populations. TDOT must consider and mitigate environmental, health, social and economic impacts of any Federally-funded transportation projects on these populations. The corridor study will include consideration and participation of these populations as recommendations are evaluated.

Table 3-2. 2010 Population, Households, and Employment – I-75

	Population		Households		Employment	
County	Total	Percent	Total	Percent	Total	Percent
Anderson	75,126	5%	31,253	6%	48,426	6%
Blount	123,241	9%	49,265	9%	57,438	7%
Bradley	99,126	7%	37,947	7%	48,831	6%
Campbell	40,722	3%	16,354	3%	13,108	2%
Hamilton	337,332	24%	136,682	24%	231,848	29%
Knox	433,056	31%	177,249	31%	288,418	36%
Loudon	48,738	4%	19,808	3%	20,340	2%
McMinn	52,197	4%	20,870	4%	22,091	3%
Meigs	11,795	1%	4,686	1%	3,116	1%
Monroe	44,618	3%	17,721	3%	17,852	2%
Polk	16,810	1%	6,653	1%	4,444	1%
Rhea	31,859	2%	12,276	2%	13,899	2%
Roane	54,159	4%	22,379	4%	24,479	3%
Scott	22,240	2%	8,671	2%	7,847	1%
Total	**1,391,019**	**100%**	**561,814**	**100%**	**802,137**	**100%**

An extensive public involvement and outreach plan has been prepared to provide full participation of all persons during the corridor study to comply with these principles. Minority and low income populations in the study area have been mapped using data from the US Census Bureau's 2012-2016 American Community Survey (ACS). Minority populations are defined as non-white populations. To determine poverty, the US Census Bureau uses a set of money income thresholds that vary by family size and composition. If a family's total income is less than the family's threshold, then that family and every individual in the family is considered in poverty. For example, in 2016, the poverty threshold for an individual was $12,486. The poverty threshold for a family unit of four was $24,755. It should be noted that persons living in poverty represent the most extreme range of the region's low-income population. Persons whose income exceed the poverty thresholds may also be included in the populations covered by Executive Order 12898.

The ACS data showed that concentrations of minorities and those in poverty are located throughout the analysis area. The highest concentrations of minorities are found around Knoxville, Chattanooga, and southeastern Blount County. The highest concentrations of people in poverty are found around Knoxville, Chattanooga and Cleveland. Figures 3-9 3-10, 3-11 and 3-12 show percentages of minority and poverty populations by census tract. These findings will be used to target outreach activities to these populations, which historically have shown lower participation rates in transportation planning than non-minority and non-low-income persons.

9-https://onthemap.ces.census.gov/

Figure 3-7. I-75 Population Density

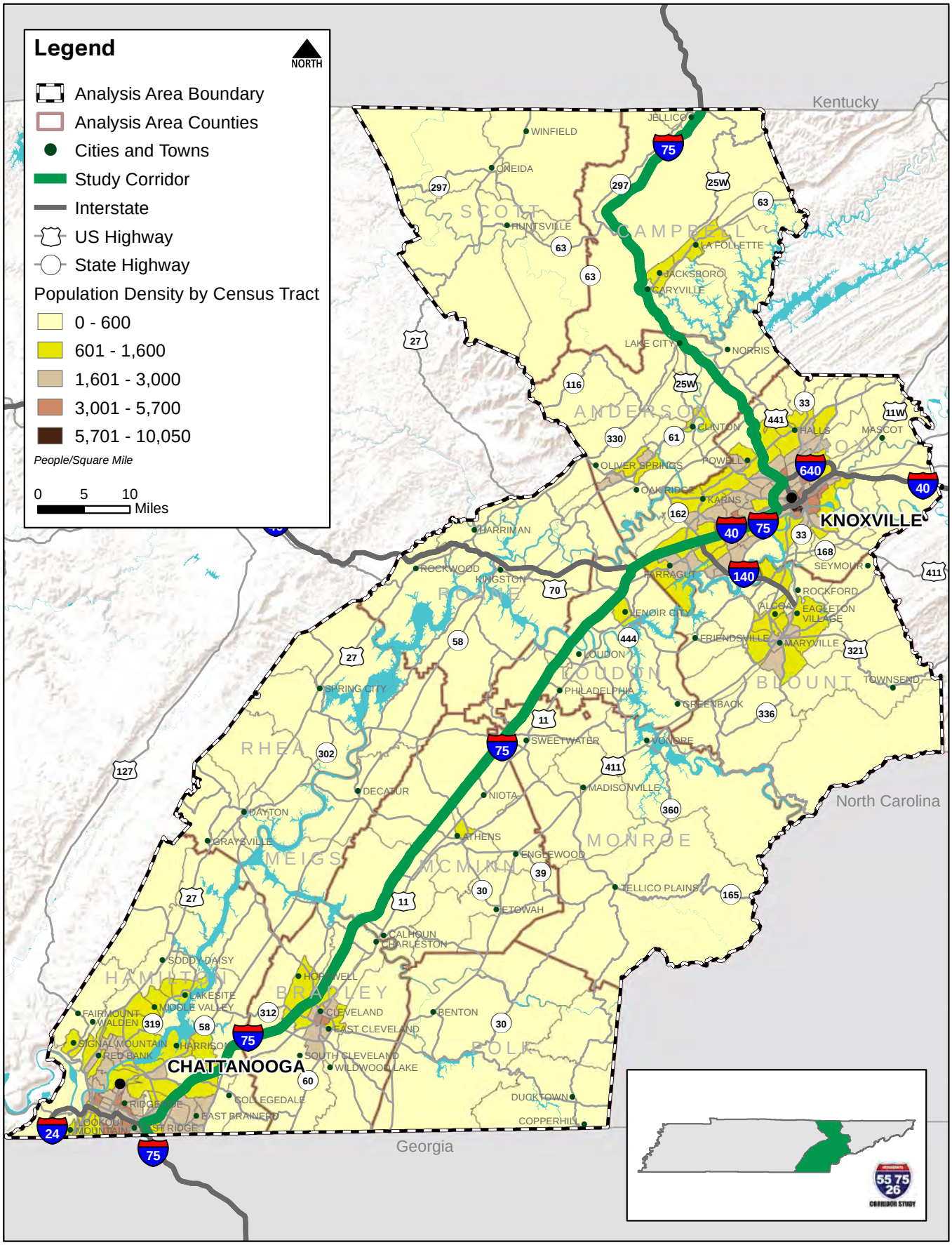
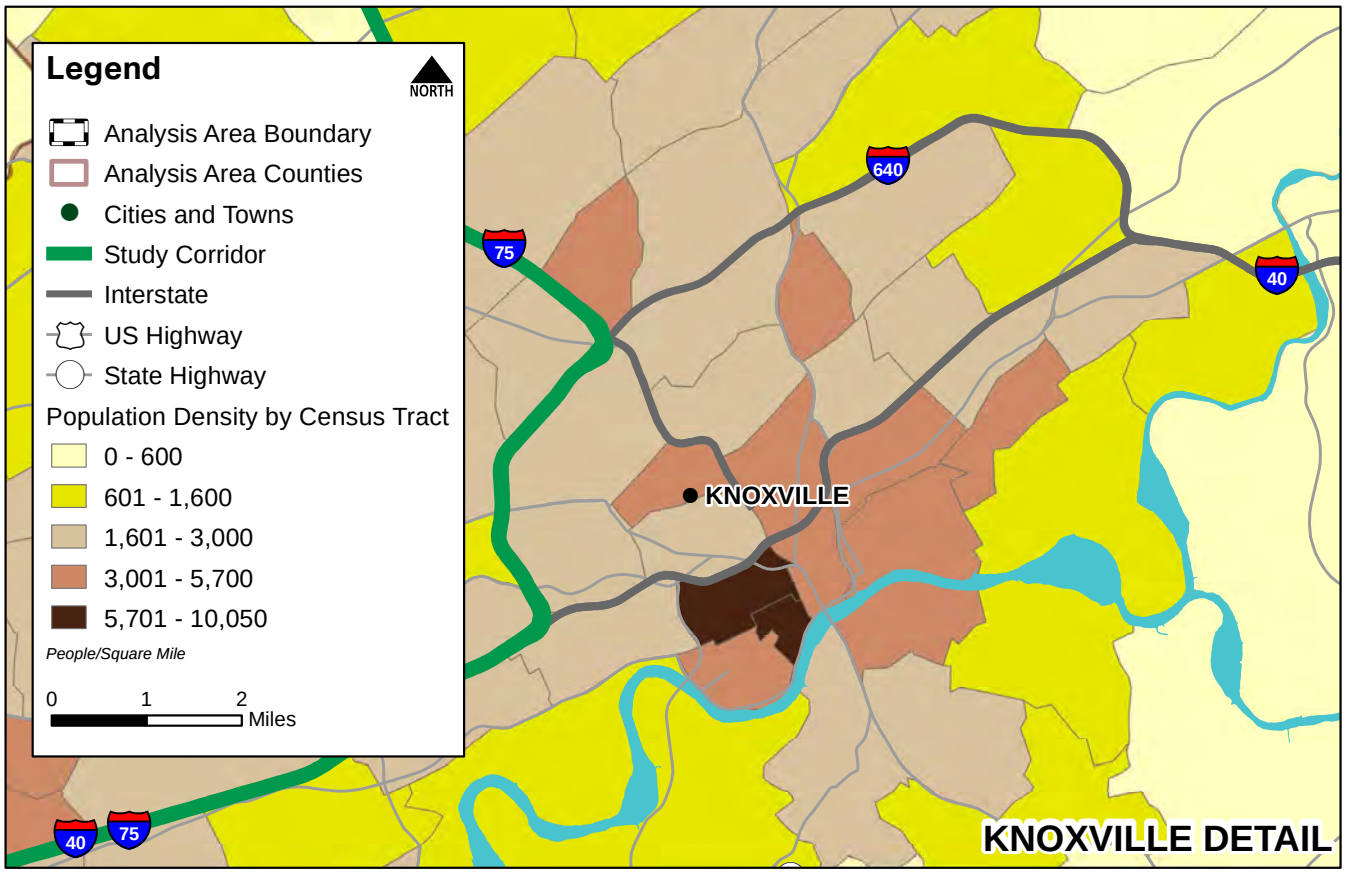


Figure 3-8. I-75 Population Density - Detail



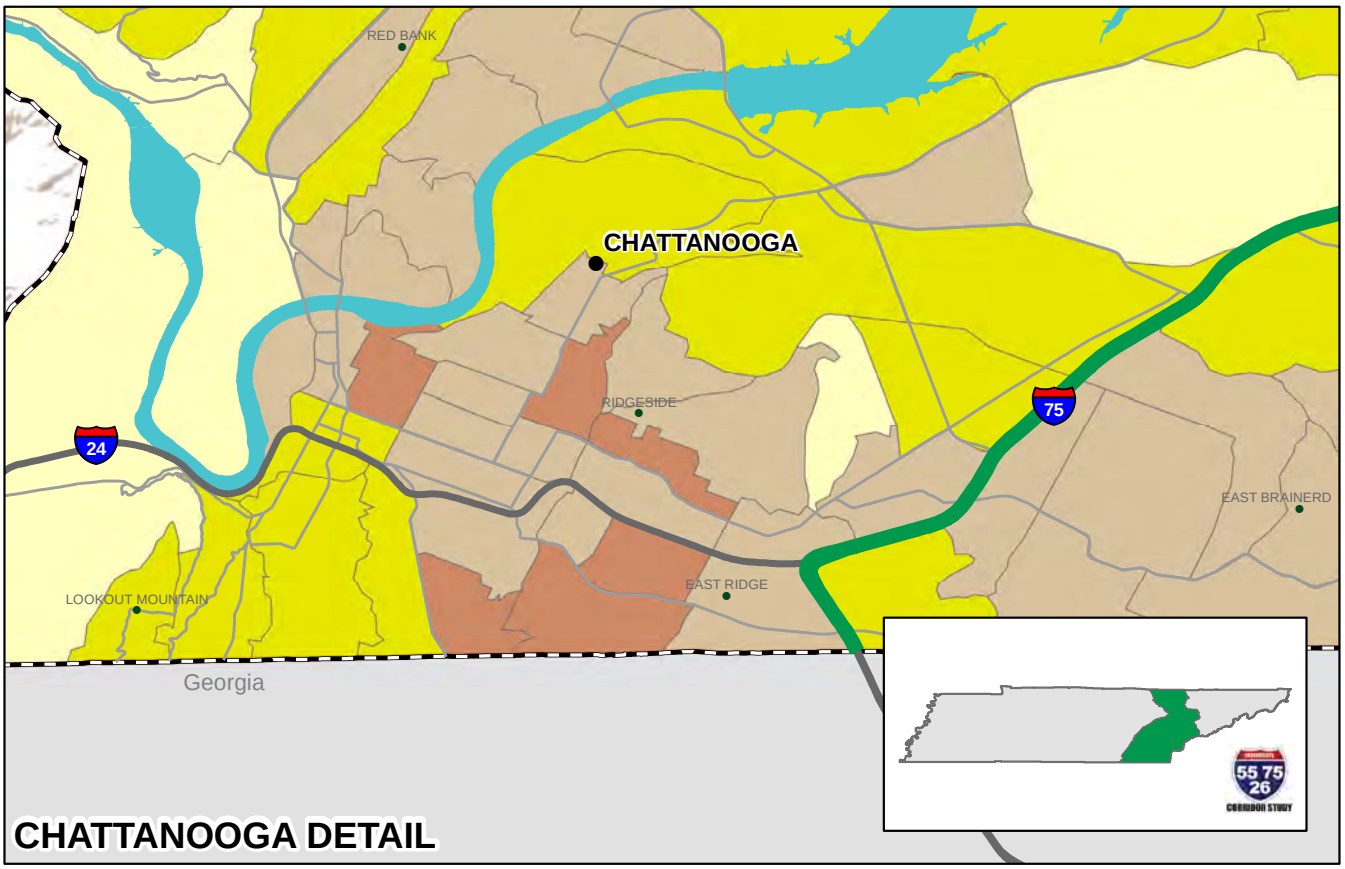


Figure 3-9. I-75 Minority Population

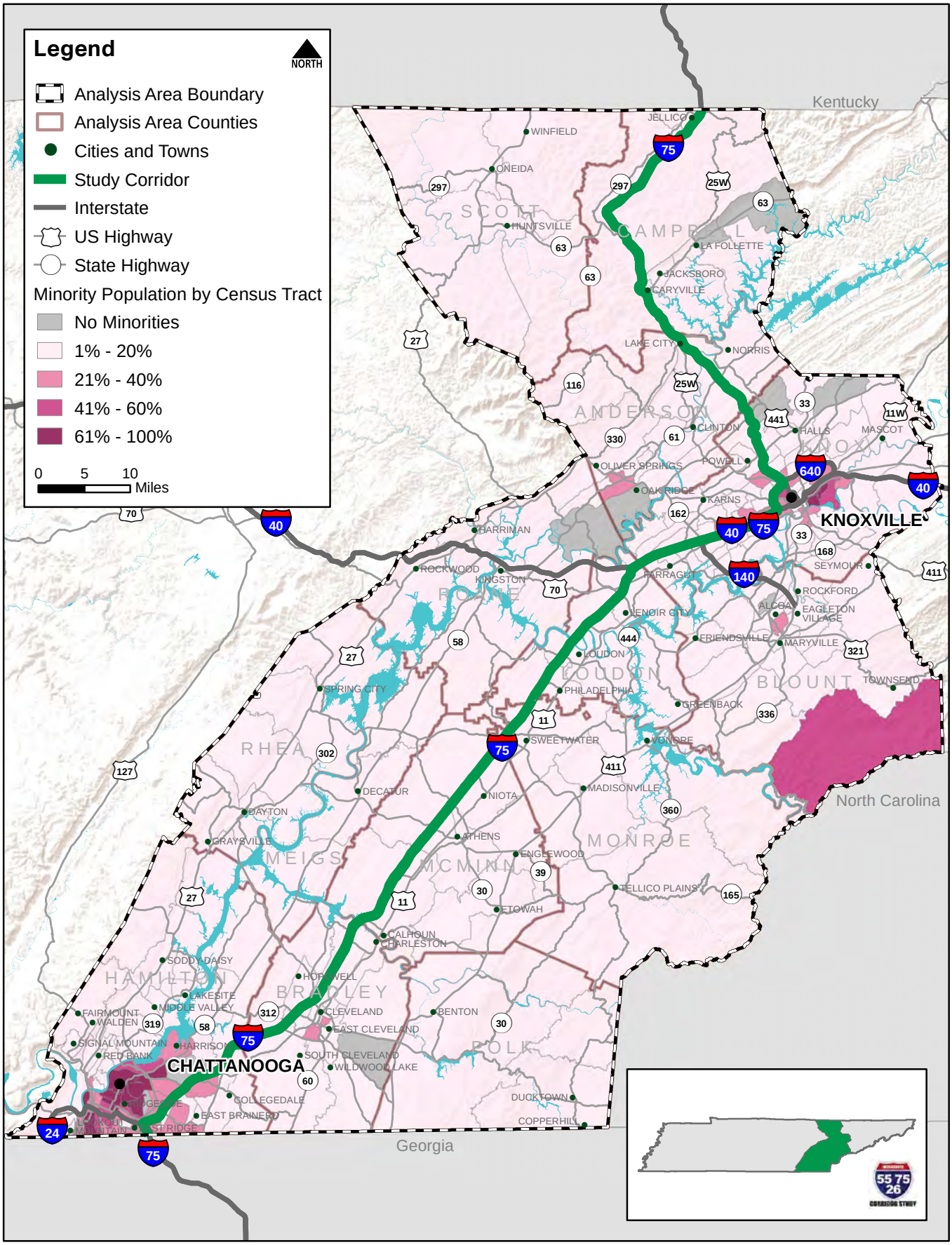
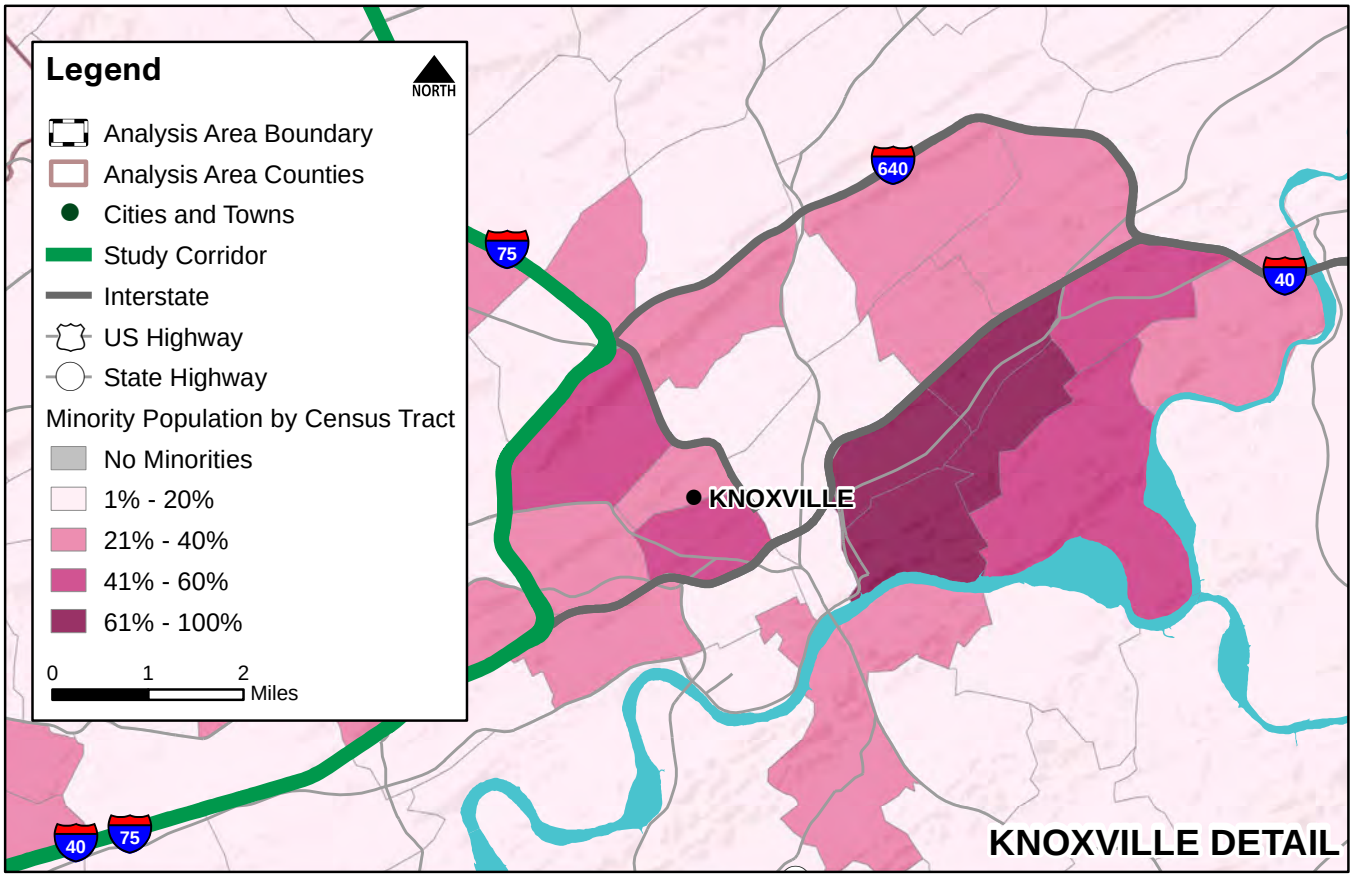


Figure 3-10. I-75 Minority Population - Detail



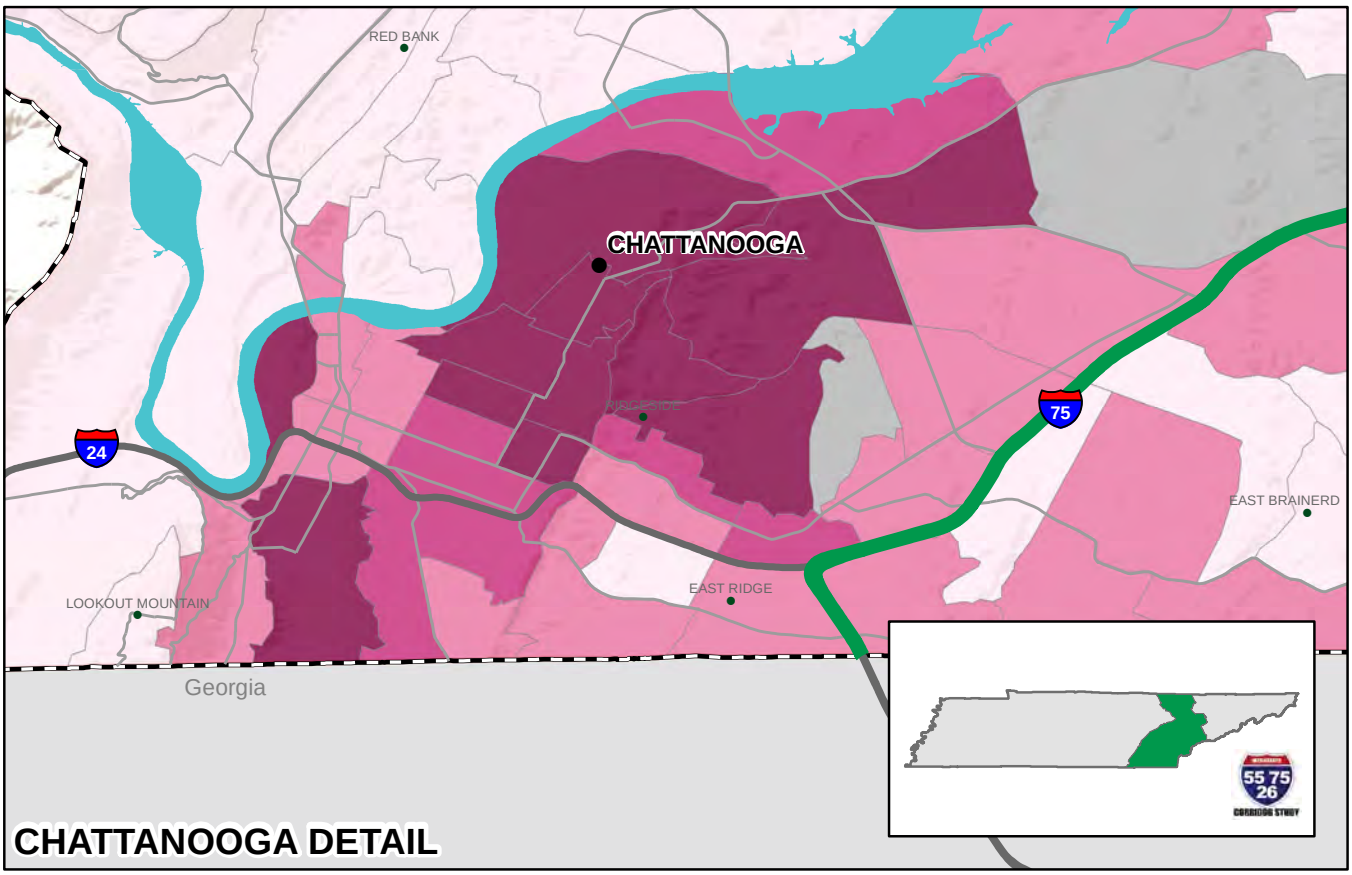


Figure 3-11. I-75 Poverty Population

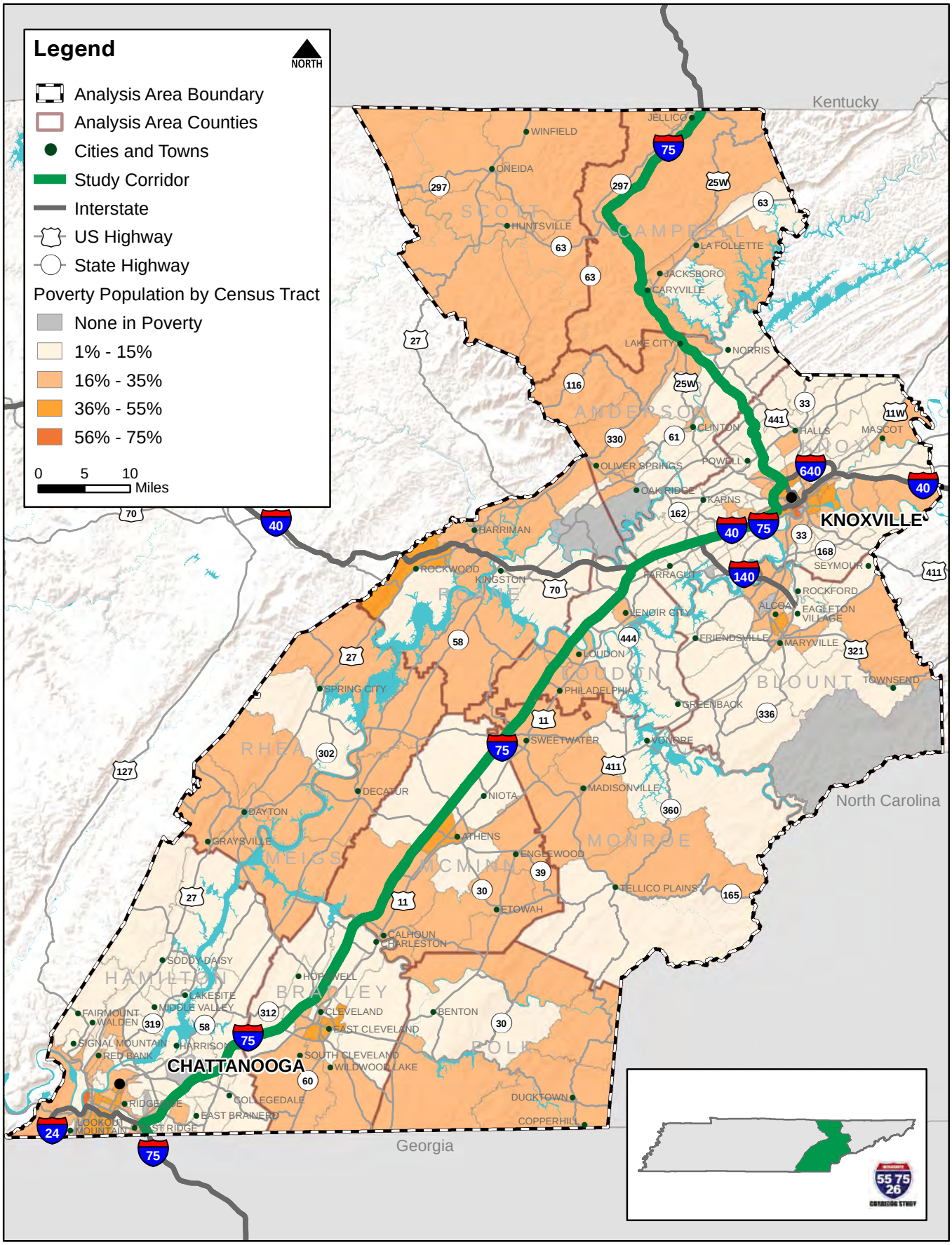
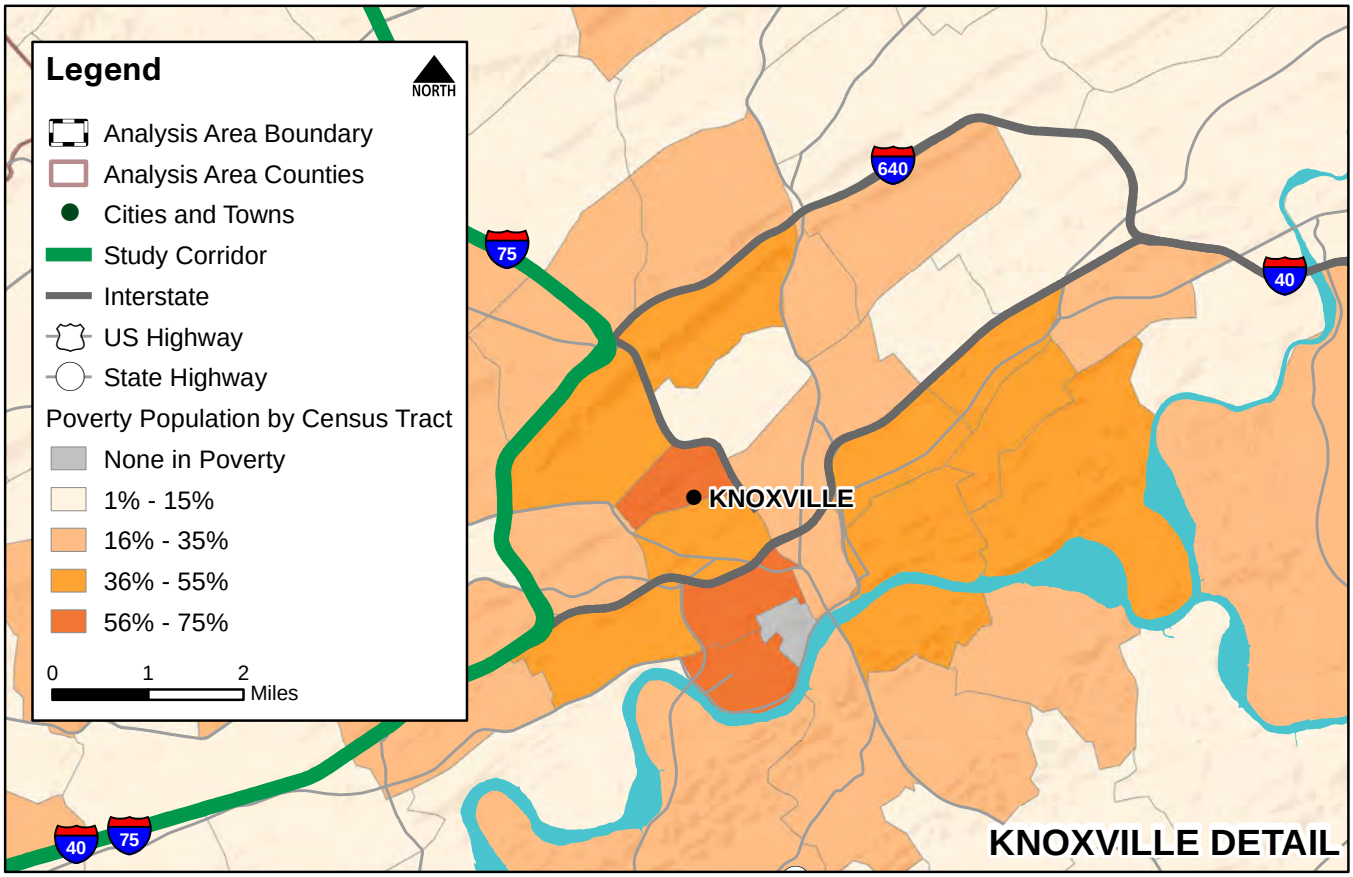
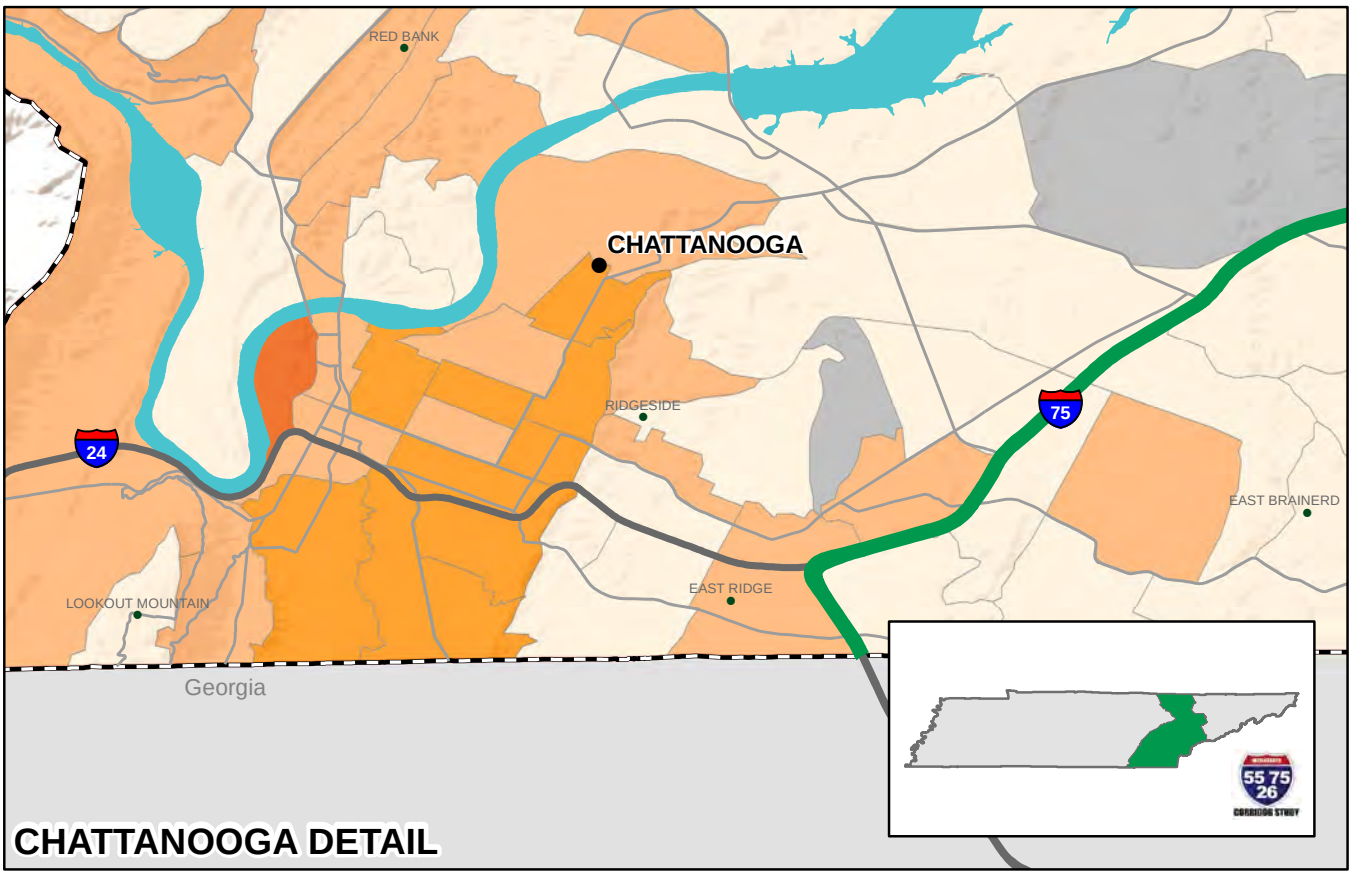


Figure 3-12. I-75 Poverty Population - Detail





3.7. Land Use

Land use, development patterns, and geographical and cultural features of the study area impact the demand for, design, and operations of transportation facilities. This section describes those factors in the I-75 corridor and the data used to assess them in relation to potential transportation system improvements.

Land Use and Development

A high-level review of existing land use conditions as well as plans was conducted to understand the existing character of the study area. In addition, this review helps to identify areas where major residential, commercial, or industrial growth is planned. For I-75, this evaluation includes the 8 counties and the 13 municipalities that have direct access to I-75: Campbell, Anderson, Knox, Loudon, Monroe, McMinn, Bradley, and Hamilton counties, and the cities of Jellico, Caryville, Rocky Top, Clinton, Knoxville, Farragut, Lenoir City, Loudon, Sweetwater, Athens, Cleveland, Collegedale, and Chattanooga.

A comprehensive set of parcel-level land use data was collected from the Tennessee Comptroller of the Treasury's Office as well as from the Knoxville, Chattanooga, and Cleveland planning agencies for counties surrounding the I-75 corridor. Using this data, approximately 2,117,000 were categorized into the following land use categories, described in detail below:

- Residential – Land containing single-family homes, duplexes, multi-family uses, mobile homes, mobile home parks, and resort residential properties
- Commercial – General commercial use, office use, motel or hotel use, or nursing homes
- Industrial – Light industry or warehousing and heavy industry
- Public/Semi-Public Uses – Parcels owned by federal, state, county, or city governments, as well as churches, fraternal land, and cemeteries.
- Utilities - Utilities or Local Assessed Utilities.
- Agricultural – Land used at least in part for agricultural operations, including groves, orchards, farms, or pastures. Parcels in this category are identified as agricultural lands even if the parcel contains residential structures or mobile homes.
- Timber/Forest – Land used, at least in part, for growing timber. Parcels in this category are identified as forested lands even if the parcel contains residential structures or mobile homes.

Table 3-3A. Existing Land Use – I-75

Land Use Category	8-County Study Area ~2,140,000 acres	County Level			
		Campbell County ~321,000 acres	Anderson County ~221,000 acres	Knox County ~337,000 acres	Loudon County ~158,000 acres
Residential	23%	11%	15%	33%	17%
Commercial	3%	6%	10%	3%	2%
Industrial	1%	0%	1%	1%	1%
Public/Semi-Public	9%	25%	12%	7%	8%
Agricultural/ Timber	49%	46%	50%	43%	56%
Utilities/ Transportation	11%	7%	9%	9%	11%
Water	3%	3%	2%	3%	5%

- Water Features – Bodies of water such as rivers and lakes that are not contained within other parcels. This does not include water bodies such as farm ponds.
- Vacant – Land that has not been converted to a developed use, such vacant lots and small properties that are not assigned to agricultural or timber uses.
- Transportation Features – The total area dedicated to either road or railroad rights-of-way as well as airports.

Land use is shown in Figure 3-13. The following paragraphs generally characterize study area land use by county.

Campbell County. Campbell County includes a significant portion of the I-75 corridor, extending approximately 31.6 miles from the Tennessee/Kentucky state line south through the center of the county. The area of Campbell County near the corridor is predominantly agricultural, with some residential areas near Jellico, Newcomb, and Caryville. Campbell County has a high percentage of public/semi-public land, most notably due to the North Cumberland Wildlife Management Area. There are a total of four interchanges along the I-75 corridor in Campbell County.

Anderson County. Anderson County includes approximately 12.1 miles of the I-75 corridor, which runs through the eastern half of the county. The area surrounding the corridor is mainly residential and agricultural with some industrial and commercial uses near the county's three interchanges.

Knox County. Knox County includes approximately 29.7 miles of the I-75 corridor. There are 17 interchanges in Knox County, providing access to other interstates as well as major US and State Routes. Of the eight counties with direct access to the I-75 corridor, Knox County is the most urbanized. North of downtown Knoxville, the I-75 corridor is surrounded mostly by residential and agricultural lands, with commercial development near the interchanges. The western portion of I-75 within Knox County is surrounded by suburban retail developments such as the Turkey Creek shopping complex and the West Town Mall.

Loudon County. Loudon County includes approximately 19.2 miles of the I-75 corridor, running through the northwestern portion of the county. In the northern portion of the county, the I-75 corridor is surrounded by residential uses along with some commercial activity. Further south, I-75 transitions into a more rural setting and is surrounded by agricultural land. There are four interchanges within Loudon County.

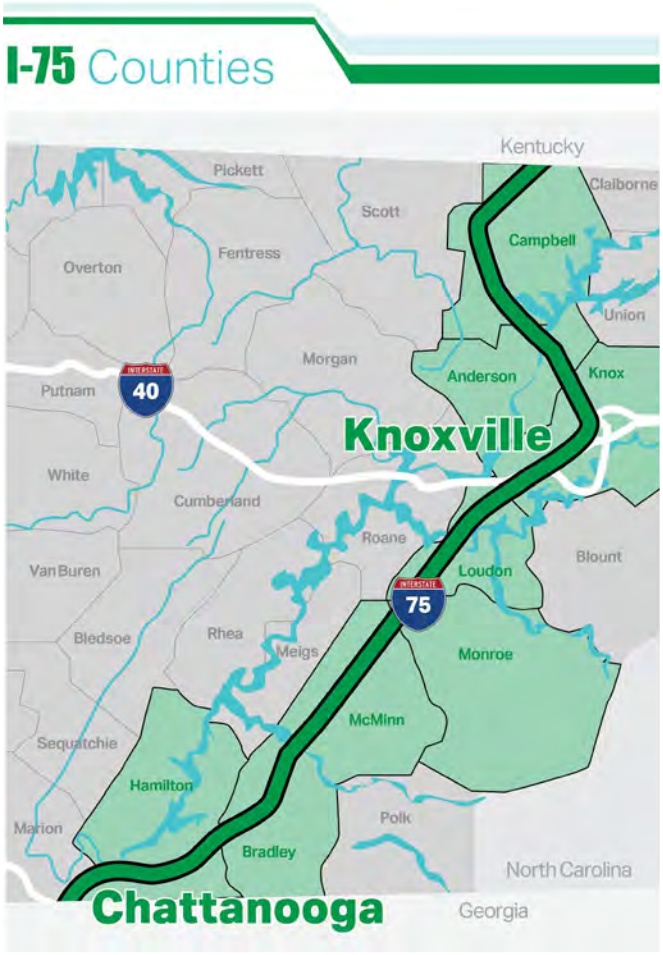
Table 3-3B. Existing Land Use – I-75

Land Use Category	8-County Study Area ~2,140,000 acres	County Level			
		Monroe County ~267,000 acres	McMinn County ~276,000 acres	Bradley County ~214,000 acres	Hamilton County ~344,000 acres
Residential	23%	16%	15%	20%	45%
Commercial	3%	1%	1%	1%	2%
Industrial	1%	1%	1%	2%	3%
Public/Semi-Public	9%	5%	3%	2%	7%
Agricultural/ Timber	49%	64%	70%	69%	10%
Utilities/ Transportation	11%	10%	9%	4%	27%
Water	3%	3%	1%	1%	6%

Monroe County. Monroe County includes the smallest portion of the I-75 corridor in the study area, with 6.5 miles extending through the northwestern tip of the county. In this area, I-75 is surrounded by agricultural land uses with some intermittent commercial activity near the county's two interchanges.

McMinn County. McMinn County includes approximately 25.0 miles of the I-75 corridor. The area surrounding the freeway is predominantly rural residential and agricultural land uses. Near the City of Athens, I-75 provides access to the Athens/McMinn Interstate Industrial Park on the west side of the corridor and to the Vulcan rock quarry on the east side. There are six interchanges on I-75 in McMinn County.

Bradley County. Bradley County includes approximately 19.3 miles of the I-75 corridor, which runs through the northwestern portion of the county. Near the northern county border and along the Hiwassee River, predominantly industrial land uses surround the corridor, including the Olin Chemical, Wacker Polysilicon, General Electric, Amazon Fulfillment Center, and Resolute Forrest Products plants. Further south, the corridor is bordered by agricultural and residential land uses, with more commercial activity near the county's four interchanges.



Hamilton County. Hamilton County includes approximately 15.7 miles of the I-75 corridor, which is located in the southeastern portion of the county bordering the Tennessee-Georgia state line. In this area, I-75 is surrounded by residential, commercial, public/semi-public, and some industrial land uses. I-75 provides access to the City of Collegedale as well as other areas outside the City of Chattanooga, such as Ooltewah and East Brainerd. There are nine interchanges along the I-75 corridor within Hamilton County. Most notably, these interchanges provide access to the Chattanooga regional airport, the Hamilton Place Mall, and the Enterprise South Volkswagen plant.

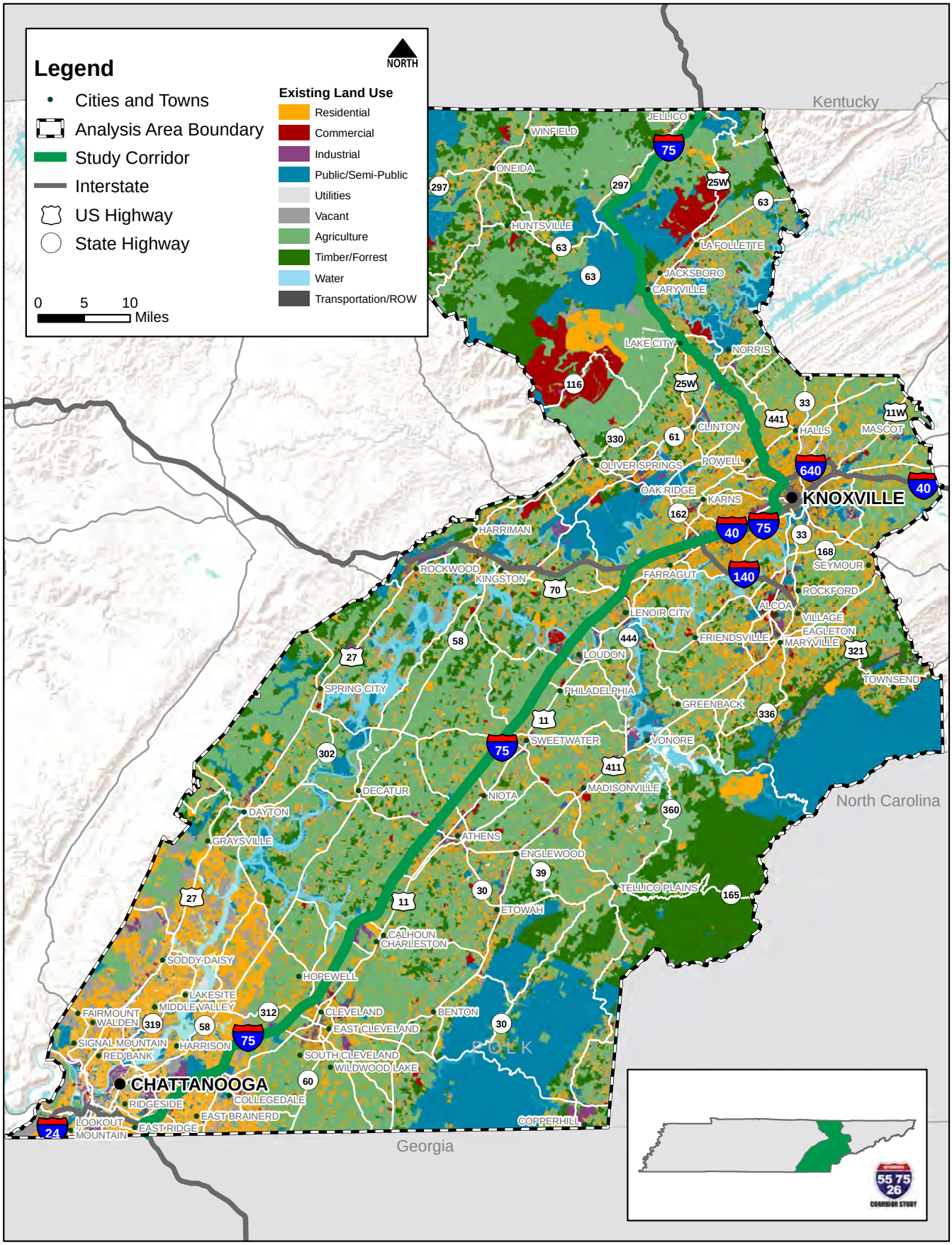
Tables 3-3A and 3-3B shows the distribution of land use within the eight study area counties as well as within each individual county. Land use composition is fairly consistent across the eight counties, albeit with different patterns in the rural and urban areas. Knox, Bradley, and Hamilton Counties, each of which is part of a Metropolitan Planning Organization, generally have a higher proportion of residential uses compared to the rural counties, which have a higher proportion of agricultural lands.

Some of the larger municipalities and counties within the corridor study area have undertaken the development of a comprehensive plan, land use plan, or a land use and transportation plan which addresses existing land use conditions within their jurisdictions and desired growth and development within their community. These plans lay the foundation for desired growth and development and ultimately affect the distribution of transportation resources. Notable comprehensive plans in the study area include those for Chattanooga (2016), Collegdale (2016), Farragut (2012), Knoxville (2018), Bradley County (2013), and Hamilton County (2016).

Future growth is expected to occur primarily near the urban areas of Knoxville, Cleveland, and Chattanooga.

Future growth around the I-75 corridor is expected to occur primarily near the urban areas of Knoxville, Cleveland, and Chattanooga. Near Knoxville, additional growth in commercial and light industrial uses is expected to occur near the I-75 interchanges. The I-75 interchanges and major routes that provide access to the City of Cleveland are expected to continue to see growth in residential uses with some industrial and distribution and commercial development as well. In Chattanooga, growth near the corridor is expected to be primarily residential in nature, but could potentially include additional commercial and industrial developments, specifically near the Tennessee-Georgia border.

Figure 3-13. I-75 Existing Land Use



Environmental Features: Wetlands

Wetlands are important natural resources across the state and benefit Tennessee ecologically, socially, and economically. They provide habitat for plants and wildlife, recharge groundwater, provide clean drinking water, support recreational activities, and reduce flooding. Proposed improvements should avoid wetlands when possible and minimize or mitigate impacts when avoidance is not possible.

The US Fish and Wildlife Service (USFWS) is the federal agency that provides wetland information to the public. The latest wetlands database (updated May 2018) was obtained from the USFWS National Wetlands Inventory (NWI) for the entire state of Tennessee. For the purpose of this planning level study, this database is sufficient to draw general conclusions about avoiding or minimizing impacts to these resources; however, additional field surveying would be necessary for design activities.

The I-75 corridor is surrounded by beautiful natural areas in addition to urban development. Photo Credit: TN.gov

The Marble Springs state historic site is located in Knox County. Photo Credit: wikipedia.com

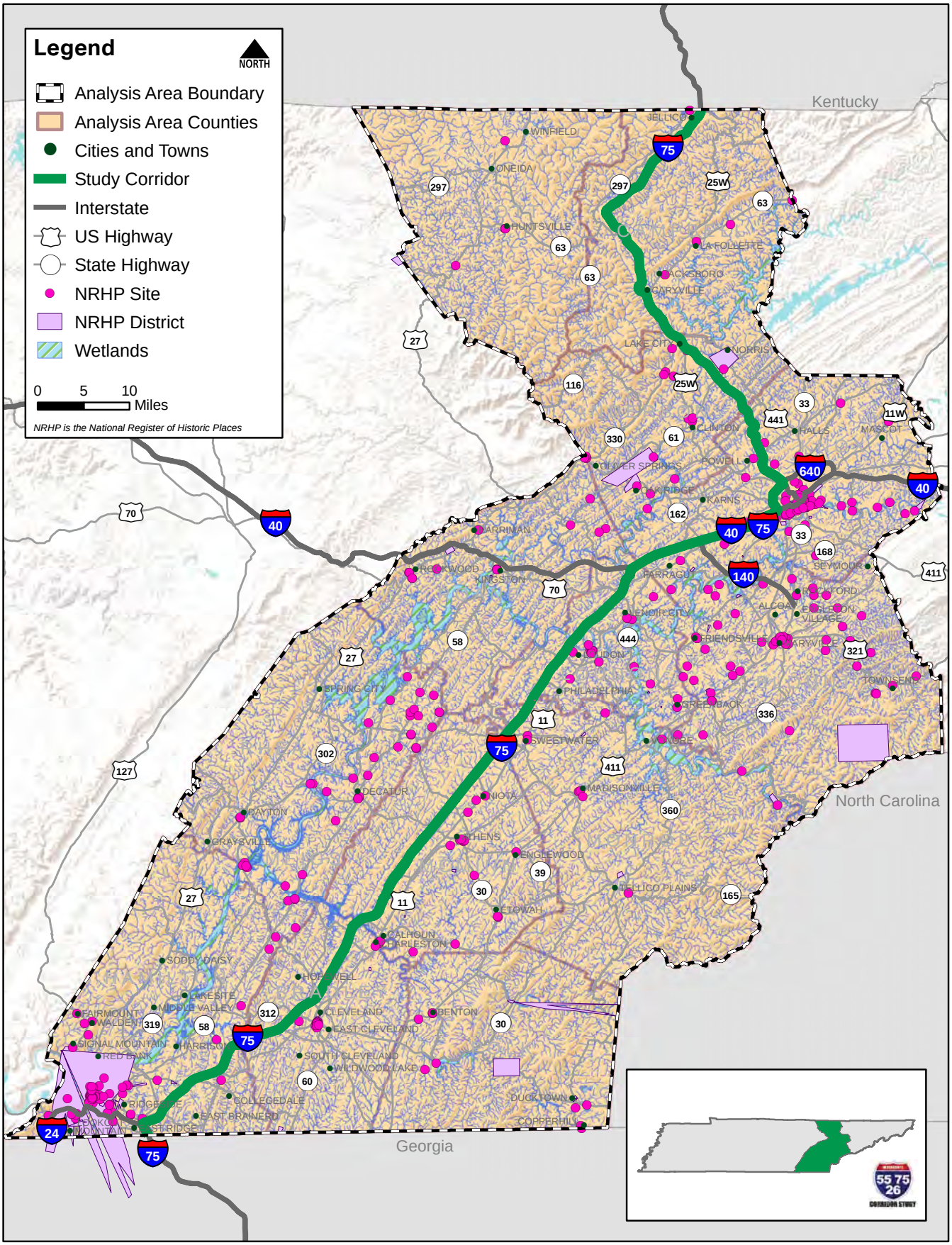
The Sam Houston Schoolhouse state historic site is located in Blount County. Photo Credit: wikipedia.com

Cultural Features: Historic Resources

Historic resources are important to the state and must be avoided when possible. Historic resources are sites, buildings and structures that are significant in American history. Preserving these resources is beneficial to a community's culture and local economy. Tennessee has a rich history that can be witnessed and studied through its historic structures and places.

The US National Park Service is the agency that houses the National Register of Historic Places (NRHP), the official list of the country's historic places worthy of preservation. The State of Tennessee also has a list of state-owned historic resources, which is maintained by the Tennessee Historical Commission. This commission is the State Historic Preservation Office (SHPO) for Tennessee. Three historic sites in the I-75 corridor study area are listed on the historical commission's state historic sites list. The Burra Burra Mine site in Ducktown (Polk County), Marble Springs in Knoxville (Knox County), and the Sam Houston Schoolhouse in Maryville (Blount County) are all state historic sites. For the purpose of this planning level study, this information is sufficient; however, additional field surveying would be necessary for design activities. Figure 3-14 shows wetlands and historic resources data for the I-75 corridor study area.

Figure 3-14. I-75 Wetlands and Historic Features



4. Forecast Future Conditions

As a long-range plan to guide future investments in the transportation system, this study relies not only on an analysis of existing conditions in the I-75 corridor, but evaluates forecasted future conditions. Population and employment growth will affect transportation demand in the future, and planned transportation improvements will alter the operations of the system. This section documents data used to understand potential future conditions in the corridor.

4.1. Population and Employment Growth

Socioeconomic data projections prepared for the Tennessee Statewide Travel Demand Model (TSM) and from Woods & Poole were examined to determine population, household and employment growth for 2020, 2030, and 2040. Population and employment data are from Woods & Poole, while household data are from the TSM. Table 4-1 shows the projected population, household, and employment within the study area.

By 2040, the analysis area is projected to grow in population by 24 percent from approximately 1,391,000 people to approximately 1,721,600 people. Meigs County is projected to have the largest increase in population (18 percent) and households (19 percent) of the counties in the analysis area from 2010 to 2040. Bradley County is projected to have the largest increase in employment (29 percent) of the counties in the analysis area from 2010 to 2040. Population, households and employment are projected to increase for all fourteen analysis area counties from 2010 to 2040.

According to survey responses from the corridor planning organizations, growth scenarios vary throughout the region.[10] The Knoxville area expects primarily infill commercial and light industrial growth around freeway interchanges, while the Chattanooga metropolitan area is likely to see mostly residential growth. The Cleveland area is attracting significant industrial growth in the I-75 corridor, with major development and job creation in areas near freeway interchanges. This has spurred residential and commercial development, along construction of supporting institutions such as schools.

Table 4-1. Population, Households, Employment (2020, 2030, 2040) – I-75

2020	Population			Households			Employment		
County	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010
Anderson	77,508	5%	6%	33,278	5%	6%	52,037	5%	7%
Blount	134,637	9%	15%	56,949	9%	16%	70,049	7%	22%
Bradley	107,732	7%	12%	43,101	7%	14%	62,848	7%	29%
Campbell	41,002	3%	11%	18,261	3%	12%	14,378	1%	10%
Hamilton	365,279	24%	7%	148,124	24%	8%	272,126	29%	17%
Knox	475,561	32%	13%	202,611	32%	14%	340,315	36%	18%
Loudon	54,302	4%	16%	23,071	4%	16%	24,286	3%	19%
McMinn	53,276	4%	7%	22,431	4%	7%	25,726	3%	16%
Meigs	12,465	1%	18%	5,565	1%	19%	3,405	0.5%	9%
Monroe	47,679	3%	9%	19,392	3%	9%	20,980	2%	18%
Polk	17,091	1%	7%	7,142	1%	7%	4,459	0.5%	0.5%
Rhea	33,178	2%	9%	13,545	2%	10%	16,348	2%	18%
Roane	53,899	4%	8%	24,373	4%	9%	25,357	3%	4%
Scott	22,452	1%	8%	9,444	2%	9%	8,587	1%	9%
Total	**1,496,061**	**100%**	**11%**	**627,287**	**100%**	**12%**	**940,901**	**100%**	**17%**

10-Project Advisory Committee Survey, December 2018

Table 4-1. Population, Households, Employment (2020, 2030, 2040) – I-75

2030	Population			Households			Employment		
County	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010
Anderson	81,485	5%	8%	35,317	5%	13%	56,163	5%	16%
Blount	150,612	9%	22%	64,652	9%	31%	79,740	8%	39%
Bradley	115,767	7%	17%	48,275	7%	27%	70,973	7%	45%
Campbell	44,355	3%	9%	20,179	3%	23%	15,992	1%	22%
Hamilton	383,123	24%	14%	159,604	23%	17%	298,744	28%	29%
Knox	527,201	33%	22%	228,018	33%	29%	389,938	37%	35%
Loudon	62,057	4%	27%	26,341	4%	33%	27,763	3%	37%
McMinn	54,115	3%	4%	23,997	3%	15%	26,701	2%	21%
Meigs	13,633	1%	16%	6,450	1%	38%	3,687	0.5%	18%
Monroe	52,174	3%	17%	21,076	3%	19%	23,128	2%	30%
Polk	17,834	1%	6%	7,638	1%	15%	4,702	0.5%	6%
Rhea	34,937	2%	10%	14,825	2%	21%	18,228	2%	31%
Roane	56,482	4%	4%	26,378	4%	18%	27,367	3%	12%
Scott	23,738	1%	7%	10,220	1%	18%	9,349	1%	19%
Total	**1,617,513**	**100%**	**16%**	**692,970**	**100%**	**23%**	**1,052,475**	**100%**	**31%**

Table 4-1. Population, Households, Employment (2020, 2030, 2040) – I-75

2040	Population			Households			Employment		
County	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010
Anderson	84,410	5%	12%	37,372	5%	20%	59,725	5%	23%
Blount	166,013	10%	35%	72,379	10%	47%	89,093	8%	55%
Bradley	121,993	7%	23%	53,465	7%	41%	78,093	7%	60%
Campbell	47,278	3%	16%	22,113	3%	35%	17,388	1%	33%
Hamilton	394,060	23%	17%	171,122	23%	25%	315,032	27%	36%
Knox	575,880	33%	33%	253,475	33%	43%	437,233	38%	52%
Loudon	69,880	4%	43%	29,616	4%	50%	31,361	3%	54%
McMinn	53,903	3%	3%	25,571	3%	23%	27,134	2%	23%
Meigs	14,621	1%	24%	7,338	1%	57%	3,943	0.5%	27%
Monroe	56,255	3%	26%	22,766	3%	28%	25,000	2%	40%
Polk	18,250	1%	9%	8,137	1%	22%	4,906	0.5%	10%
Rhea	36,077	2%	13%	16,111	2%	31%	19,692	2%	42%
Roane	58,321	3%	8%	28,391	4%	27%	29,145	3%	19%
Scott	24,730	1%	11%	11,002	1%	27%	10,028	1%	28%
Total	**1,721,671**	**100%**	**24%**	**758,858**	**100%**	**35%**	**1,147,773**	**100%**	**43%**

Figure 4-1. I-75 Change in Population (2010 to 2040)

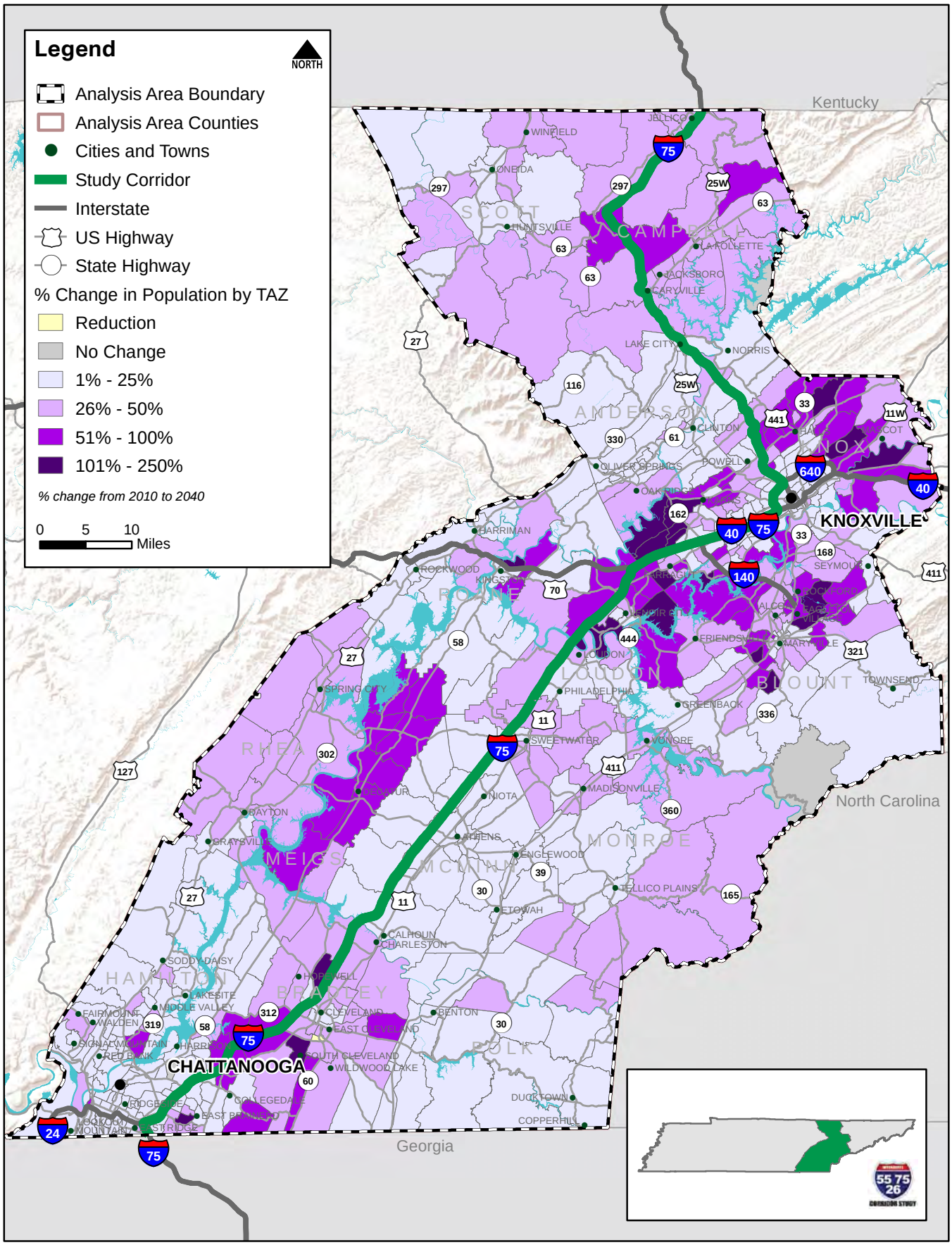


Figure 4-2. I-75 Change in Number of Households (2010 to 2040)

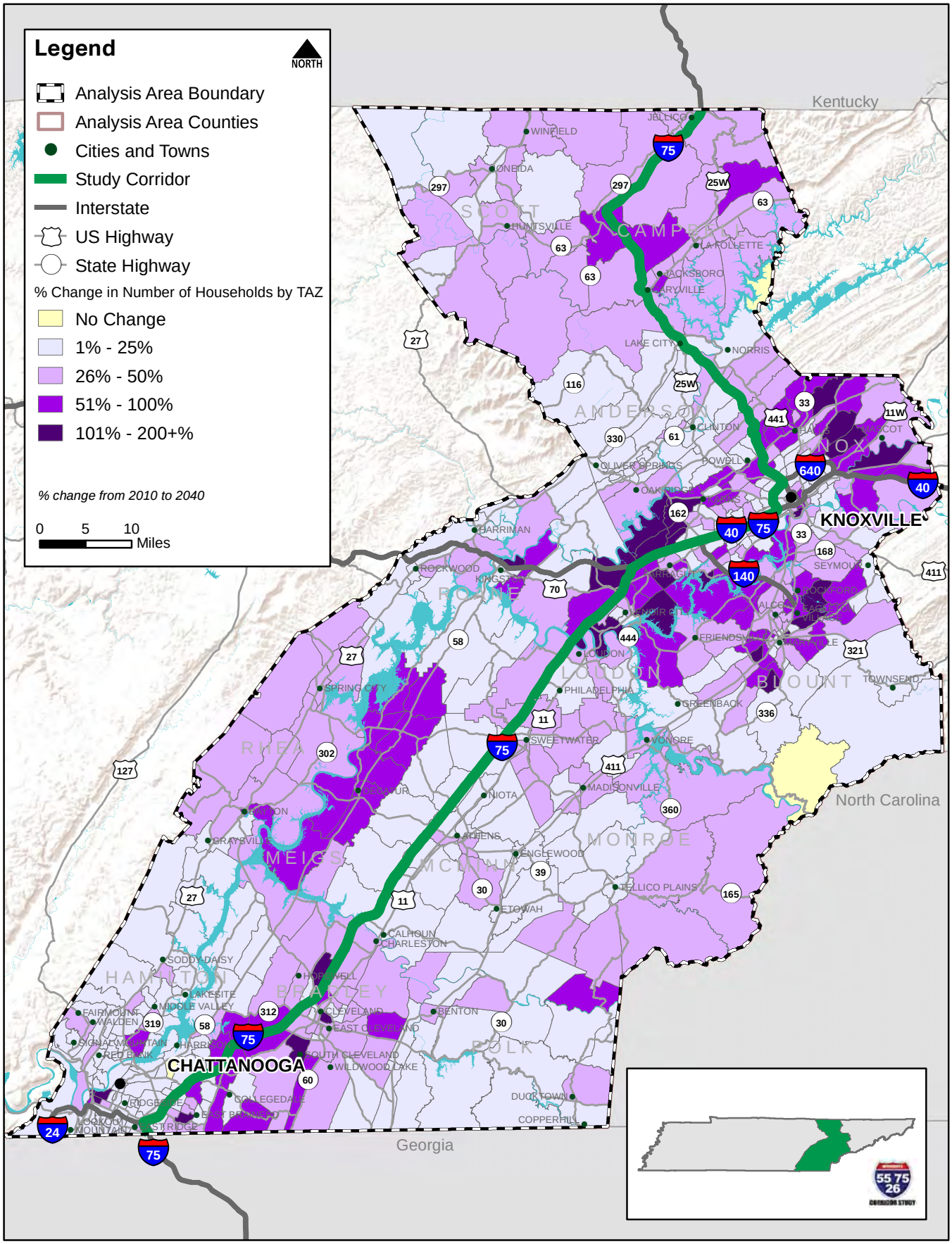
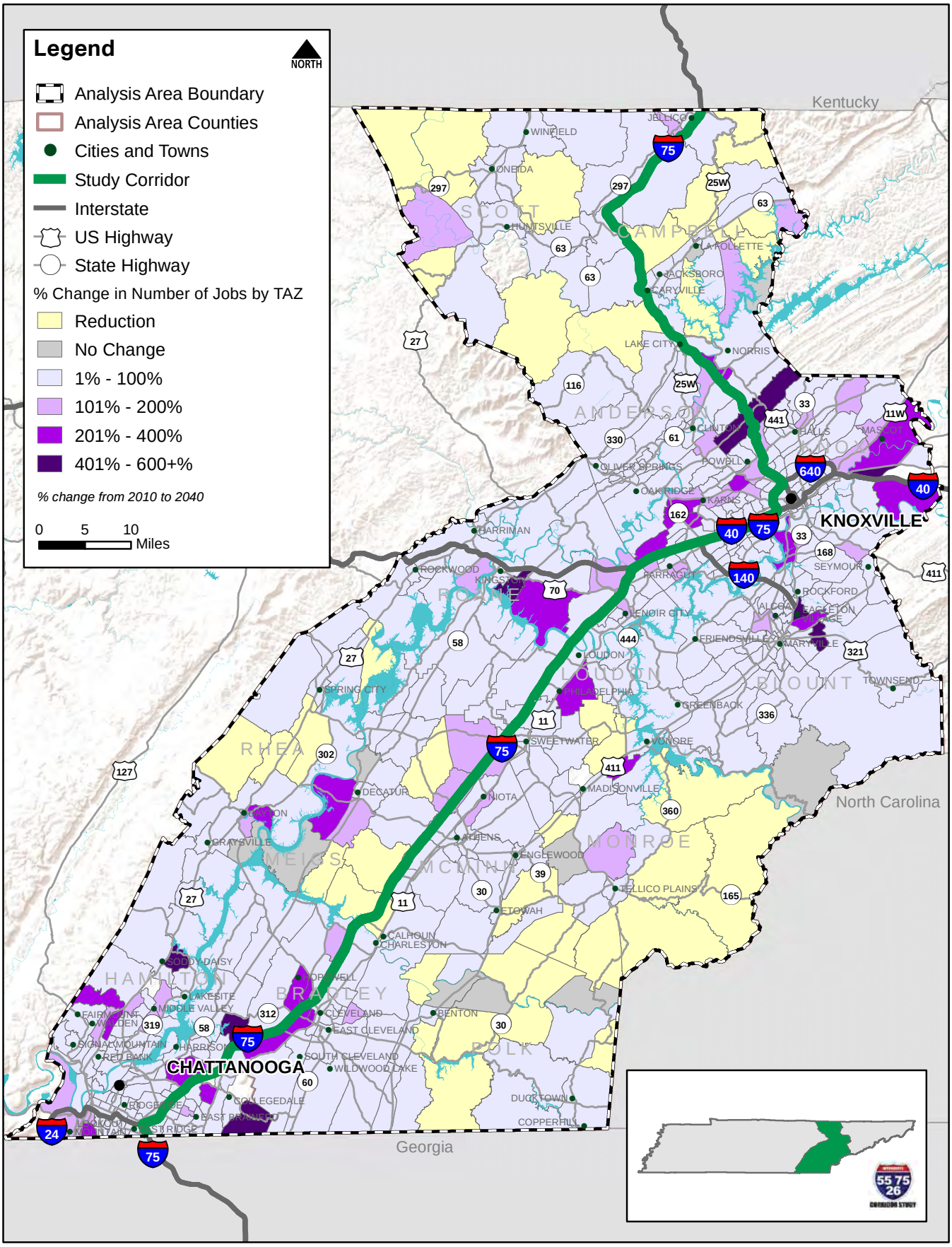


Figure 4-3. I-75 Change in Number of Jobs (2010 to 2040)



4.2. Planned Transportation Projects

TDOT continues to improve capacity and safety as needed along the I-75 study corridor. In May 2016, the 2040 Regional Transportation Plan (RTP) was adopted by the Cleveland Urban Area Metropolitan Planning Organization Executive Board. In April 2017, the Knoxville Regional Transportation Planning Organization (TPO) Executive Board adopted the Mobility Plan 2040. In November 2018, the Chattanooga-Hamilton County/North Georgia TPO Executive Board adopted the 2045 RTP. In addition to these documents, MPO Transportation Improvement Programs (TIPs) and TDOT State Transportation Improvement Program (STIP) were reviewed to identify the planned and programmed projects along the I-75 study corridor.

Projects along the I-75 study corridor includes widening the existing roads, construction of new roadways and the reconstruction of interchanges. The full list of these projects is shown in Table 4-2. Figures 4-4, 4-5, and 4-6 show the distribution of the projects. Some of the MPO projects for which a need has been determined, but no funding source has yet been identified, are not included in this report, except those fiscally constrained projects.

Table 4-2. Planned and Programmed Projects – I-75

Source	ID	Route	Project Limits	Improvement	Cost	Year	Lead Agency/ Funding Type	LRTP# or TIP #
Knoxville TPO FY 2017 - 2020 TIP and 2040 MTP	1	I-75	Interchange at Raccoon Valley Rd (SR-170)	Reconfiguration	$16,672,330	2040	NHPP	RTP# 09-679
	2	I-75	From mile marker 109.6 to just before SR-61 (Exit 122)	ITS Expansion	$2,200,000	2022	NHPP	TIP# 17-2017-034
	3	I-75	Emory Rd (SR-131) to Raccoon Valley Rd (SR-170)	Widen from 4 to 6 lanes	$70,630,052	2030	NHPP	RTP# 09-692
	4	I-75	Interchange at Emory Rd (SR-131)	Reconfiguration	$1,061,208	2022	HSIP	RTP# 09-652
	5	I-75	Interchange at Callahan Dr.	Increase southbound off-ramp storage	$827,742	2022	HSIP	RTP# 09-661
	6	I-75	Interchange at Merchant Dr.	Increase northbound off-ramp storage	$1,061,208	2022	HSIP	RTP# 09-662
	7	I-75	Interchange at I-640	Interchange improvements	$95,118,135	2030	NHPP	RTP# 09-654
	8	Pellissippi Pkwy (I-140)	I-40 to Dutchtown Rd	Widen from 1 to 2 lanes northbound	$1,591,812	2022	HSIP	RTP# 09-623
	9	I-75	Campbell Station Rd Interchange to Lovell Rd Interchange	Construct auxiliary lanes	$10,196,834	2026	NHPP	RTP# 13-603
	10	Campbell Station Rd	Interchange at I-40/75	Reconfiguration	$48,503,907	2030	NHPP	RTP# 09-629
	11	I-75	I-40/75 Interchange to Campbell Station Rd Interchange	Widen from 6 to 8 lanes	$44,599,542	2034	NHPP	RTP# 09-691
	12	Everett Road	Watt Rd to Split Rail Ln	Reconstruct 2-lane road	$26,885,496	2040	L-STBG	RTP# 09-669
	13	I-75	Interchange at Watt Rd	Reconfiguration	$27,455,714	2034	NHPP	RTP# 09-651
	14	I-75	Interchange at US-321 (Exit 81)	Add high mast lighting	$359,770	2022	L-STBG	TIP# 17-2017-041
	15	U.S. 11 and U.S. 321	U.S. 11 from G St to U.S. 321 (1.2 miles) and U.S. 321 from U.S. 11 to I-75 SB ramps (2.7 miles)	Implement ITS signal system	$1,333,500	2017	CMAQ	TIP# 17-2014-232

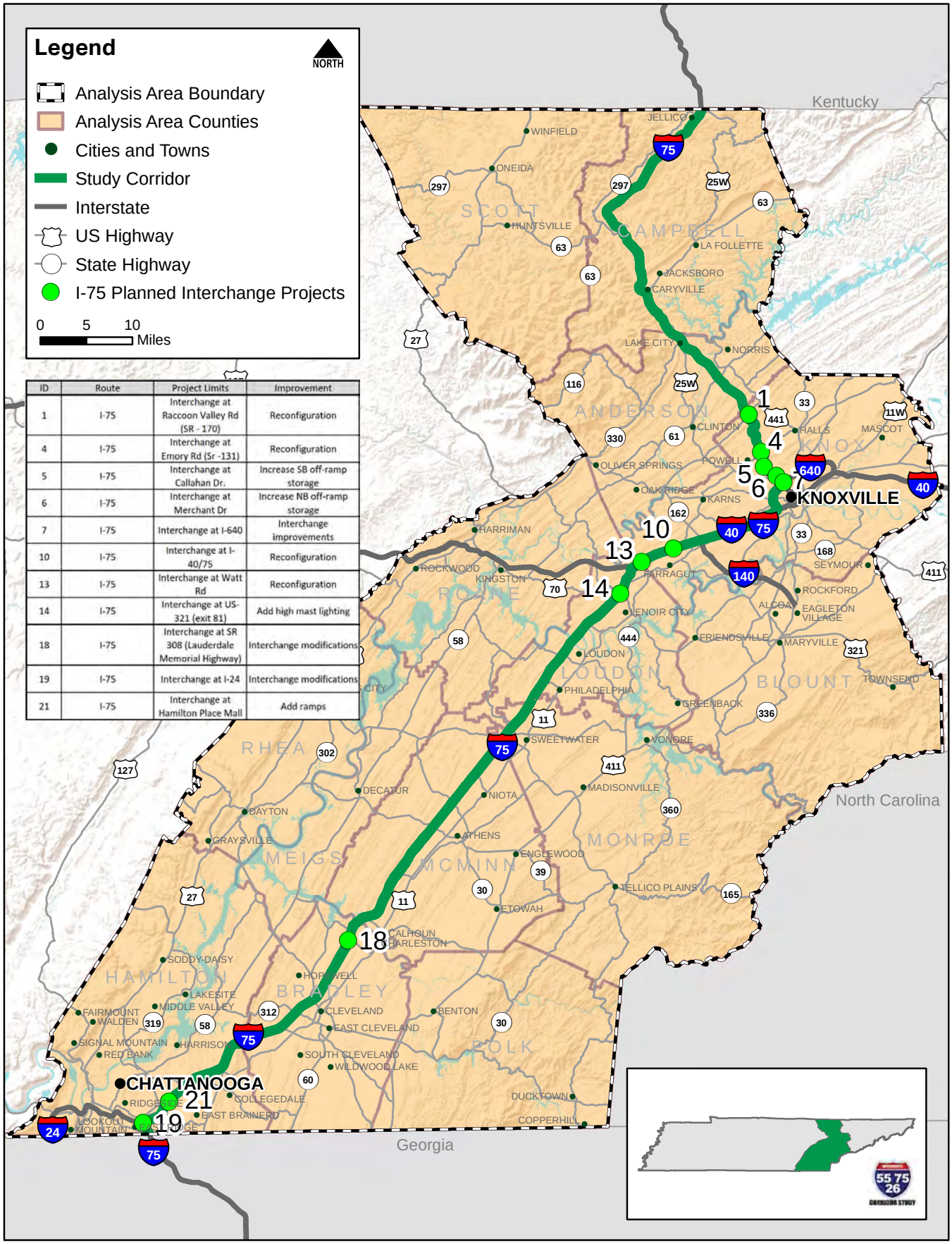
Table 4-2. Planned and Programmed Projects – I-75

Source	ID	Route	Project Limits	Improvement	Cost	Year	Lead Agency/ Funding Type	LRTP# or TIP #
Cleveland MPO FY 2017 - 2020 TIP and 2040 RTP	16	I-75	Hamilton County Line to APD-40	Widen from 4 to 6 lanes	$129,200,000	2040	NHPP, S-STBG	RTP# 105
	17	I-75	APD-40 (SR 311) to Bradley/McMinn County Line	Widen from 4 to 6 lanes	$242,900,000	2040	NHPP, S-STBG	RTP# 101
	18	I-75	Interchange at SR 308 (Lauderdale Memorial Highway)	Interchange Modifications	$19,300,000	2040	NHPP, S-STBG	RTP# 83
Chattanooga TPO 2045 RTP	19	I-75	Interchange at I-24	Interchange Modifications	$108,000,000	2020	NHPP	TIP# 33020
	20	Goodwin Road	from Gunbarrel to Hamilton Place Blvd	New 4 lane facility	$19,091,227	2020	STBG-M	RTP# 60
	21	I-75	Interchange at Hamilton Place Mall	Add ramps	$14,348,400	2025	NHPP	RTP# 4
	22	SR-317 (Bonny Oaks Dr.)	From Adamson Circle to I-75	Widen from 2 to 4 lanes	$44,656,200	2025	NHPP	RTP# 70
	23	Route 4/I-75 Express Ext & Mod	From Hamilton Place to Lee Highway Interchange park-and-ride	Transit-Extend CARTA Express Route 4	$32,978,500	2035	FTA	RTP# 138
	24	I-24	From I-75 to US-27	Widen from 6 to 8 lanes	$226,530,160	2045	NHPP, STBG-S	RTP# 113

The I-75/I-24 split is located just north of the Tennessee/Georgie state line.

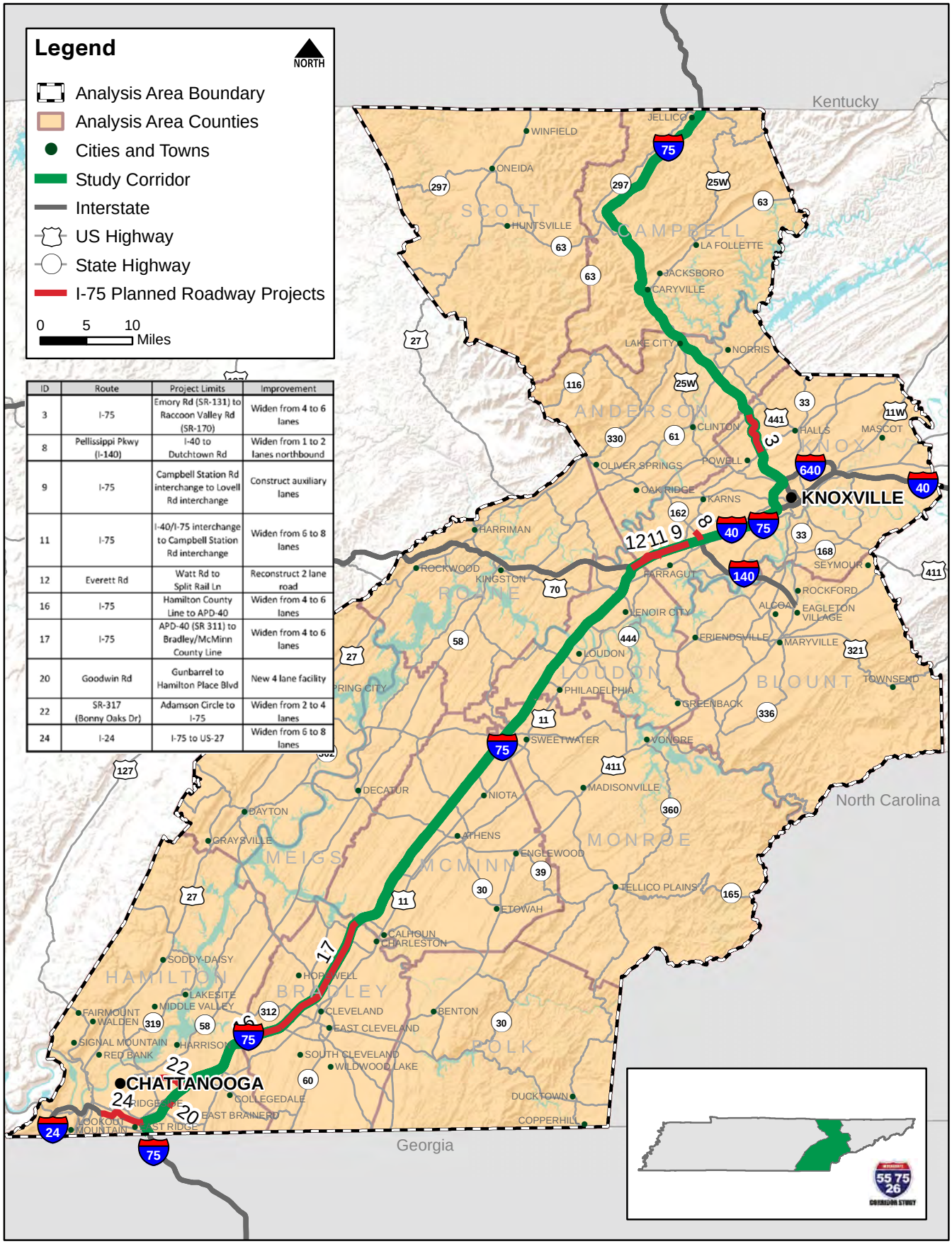
Photo Credit: WRCBTV.com

Figure 4-4. I-75 Planned Interchange Projects



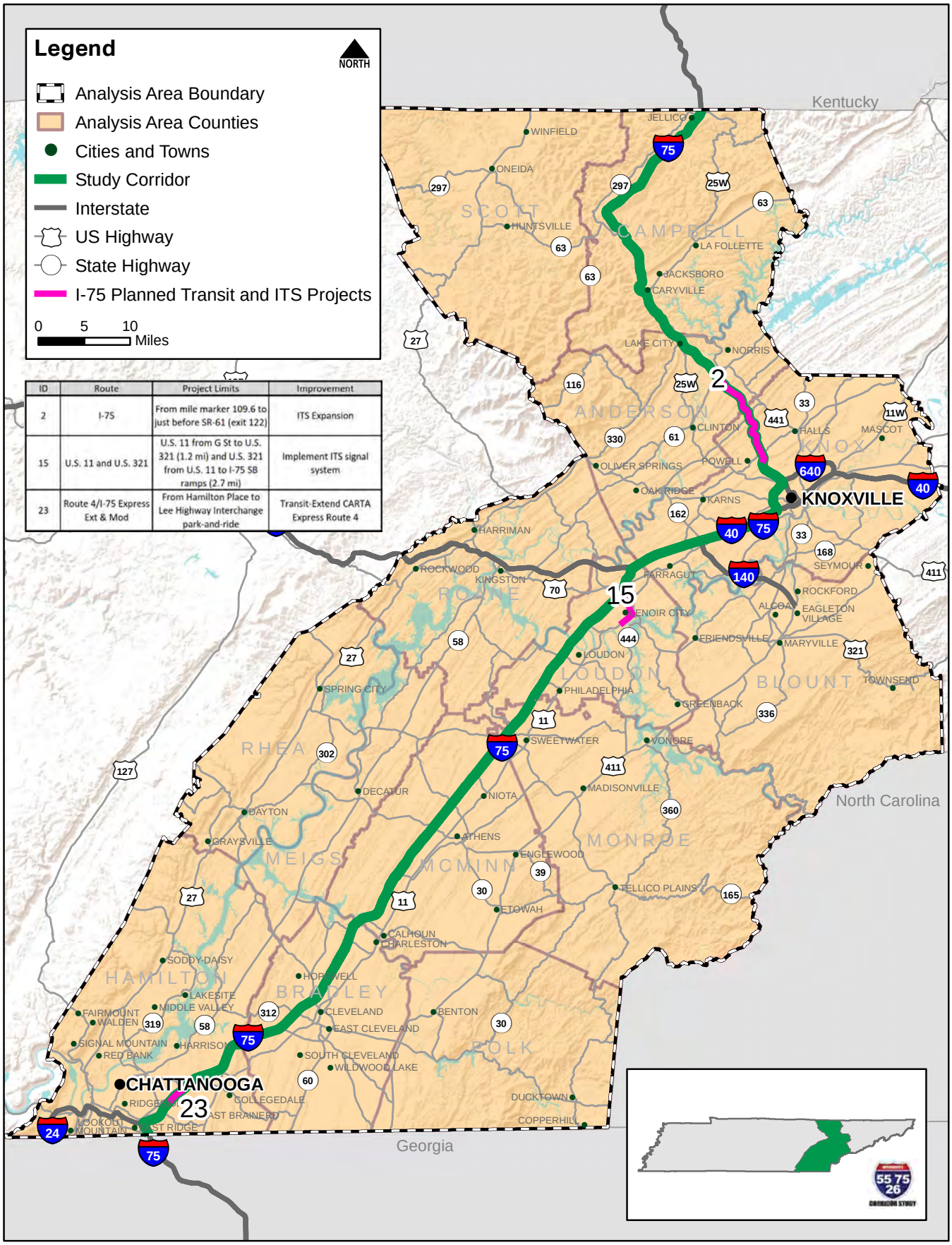
ID	Route	Project Limits	Improvement
1	I-75	Interchange at Raccoon Valley Rd (SR - 170)	Reconfiguration
4	I-75	Interchange at Emory Rd (Sr -131)	Reconfiguration
5	I-75	Interchange at Callahan Dr.	Increase SB off-ramp storage
6	I-75	Interchange at Merchant Dr	Increase NB off-ramp storage
7	I-75	Interchange at I-640	Interchange improvements
10	I-75	Interchange at I-40/75	Reconfiguration
13	I-75	Interchange at Watt Rd	Reconfiguration
14	I-75	Interchange at US-321 (exit 81)	Add high mast lighting
18	I-75	Interchange at SR 308 (Lauderdale Memorial Highway)	Interchange modifications
19	I-75	Interchange at I-24	Interchange modifications
21	I-75	Interchange at Hamilton Place Mall	Add ramps

Figure 4-5. I-75 Planned Capacity and Reconstruction Projects



ID	Route	Project Limits	Improvement
3	I-75	Emory Rd (SR-131) to Raccoon Valley Rd (SR-170)	Widen from 4 to 6 lanes
8	Pellissippi Pkwy (I-140)	I-40 to Dutchtown Rd	Widen from 1 to 2 lanes northbound
9	I-75	Campbell Station Rd interchange to Lovell Rd interchange	Construct auxiliary lanes
11	I-75	I-40/I-75 interchange to Campbell Station Rd interchange	Widen from 6 to 8 lanes
12	Everett Rd	Watt Rd to Split Rail Ln	Reconstruct 2 lane road
16	I-75	Hamilton County Line to APD-40	Widen from 4 to 6 lanes
17	I-75	APD-40 (SR 311) to Bradley/McMinn County Line	Widen from 4 to 6 lanes
20	Goodwin Rd	Gunbarrel to Hamilton Place Blvd	New 4 lane facility
22	SR-317 (Bonny Oaks Dr)	Adamson Circle to I-75	Widen from 2 to 4 lanes
24	I-24	I-75 to US-27	Widen from 6 to 8 lanes

Figure 4-6. I-75 Planned Transit and ITS Projects



ID	Route	Project Limits	Improvement
2	I-75	From mile marker 109.6 to just before SR-61 (exit 122)	ITS Expansion
15	U.S. 11 and U.S. 321	U.S. 11 from G St to U.S. 321 (1.2 mi) and U.S. 321 from U.S. 11 to I-75 SB ramps (2.7 mi)	Implement ITS signal system
23	Route 4/I-75 Express Ext & Mod	From Hamilton Place to Lee Highway Interchange park-and-ride	Transit-Extend CARTA Express Route 4

I-26 Corridor

▶ Corridor Data and Information Inventory

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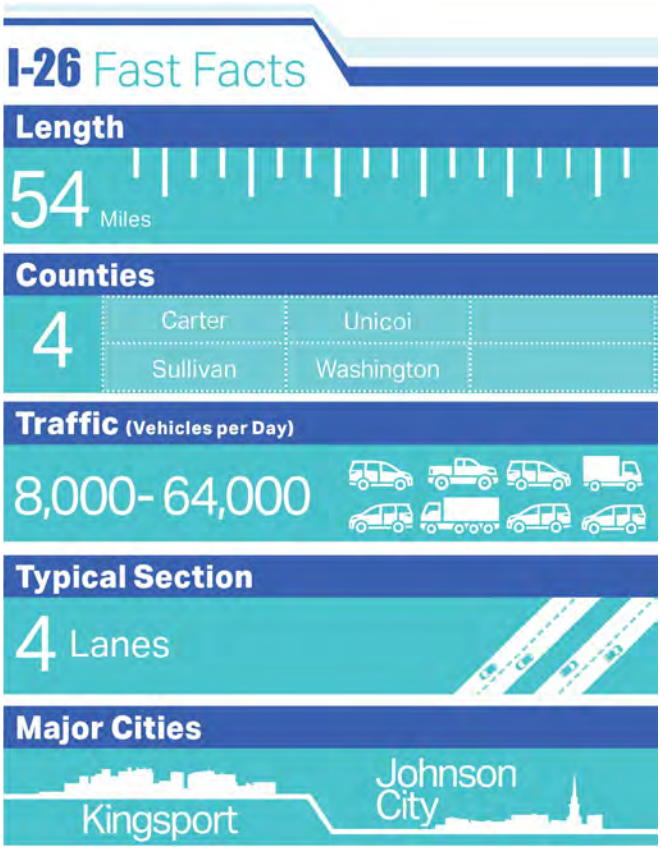
I-26 Corridor

1. Introduction

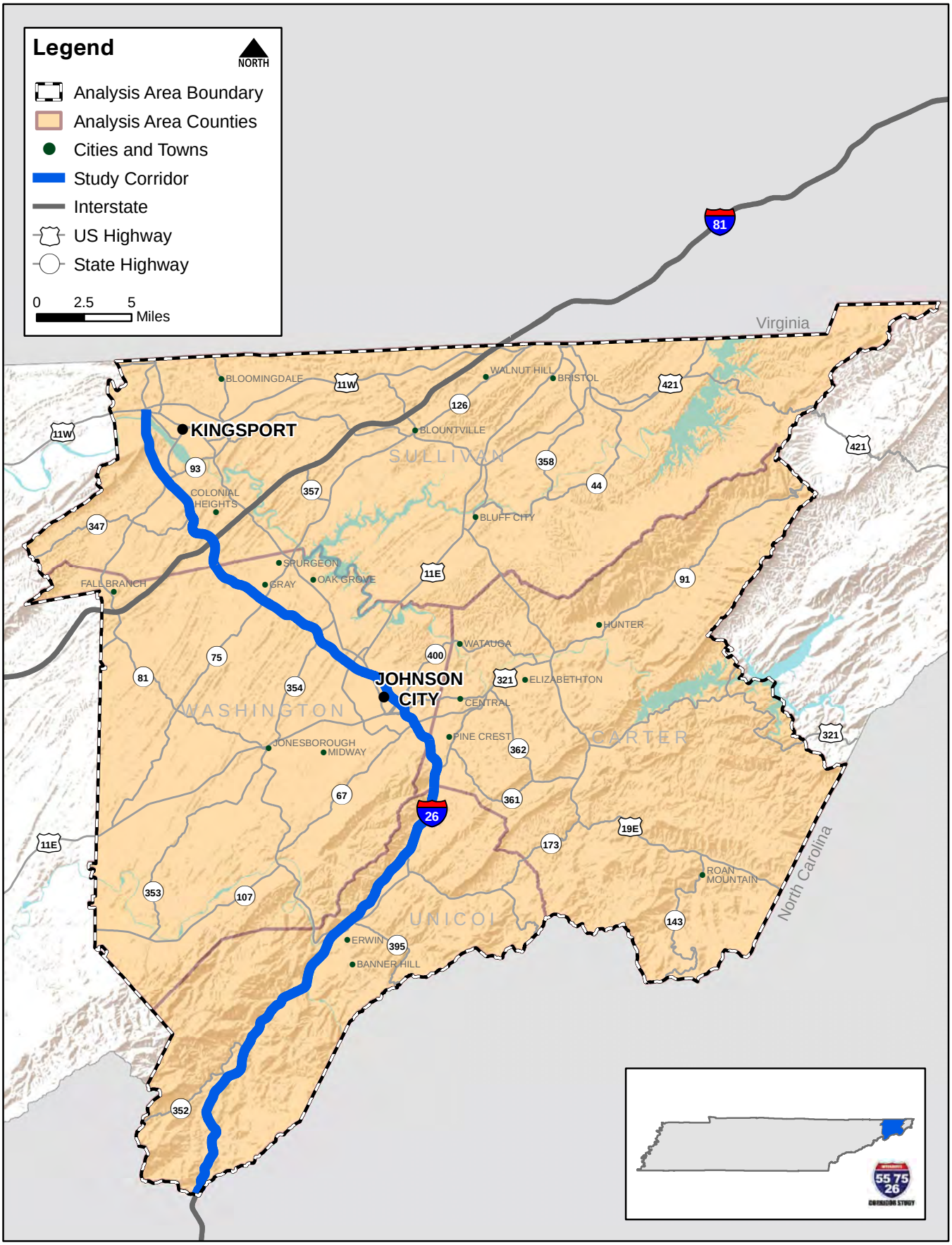
The I-26 Corridor Data and Information Inventory describes data used to develop and evaluate multimodal transportation improvement options for the I-26 in eastern Tennessee. This corridor was studied as part of a larger corridor study that included I-55, I-75 and I-155 in addition to I-26. Interstate 26 is a nominally east-west (but physically northwest-southeast) route in the southeastern United States, connecting Charleston, South Carolina, at US 17, to Kingsport, Tennessee at US 23. The length of the Tennessee portion of the I-26 corridor is approximately 54 miles and includes I-26 beginning at the Tennessee/North Carolina border and terminating at the junction of US 11W and US 23 in Kingsport. The study area is shown in Figure 1-1; it includes Carter, Sullivan, Unicoi and Washington counties.

The main purpose of this study is to identify existing and emerging deficiencies along the I-26 corridor and to evaluate and prioritize improvements to address those deficiencies. The study will consider innovative approaches to explore the multimodal issues and opportunities available to the Tennessee Department of Transportation (TDOT) to address capacity and congestion, enhance operational efficiency, improve safety and security, expand transportation choices, and support economic growth and competitiveness. This memo documents the data gathered to support study analysis. It includes information about existing transportation facilities and their operations, corridor demographic and economic conditions (and forecasted changes in those conditions) and planned improvement projects. Where applicable, it provides snapshots of existing conditions across these factors.



The I-26 corridor is being studied as part of a larger corridor study that also includes I-155, I-75, and I-55.

Figure 1-1. I-26 Corridor Study Area



2. Previous and Current Plans and Studies

Many agencies have conducted studies and developed a variety of plans for the I-26 study area; however, this study is the first comprehensive study to be conducted for the entire I-26 corridor. These studies focus on all modes of transportation and various levels of infrastructure, from statewide and regional to community-specific. Key studies, plans, and programs were reviewed to develop an understanding of the corridor and the needs and opportunities that have been previously identified. These are summarized in Table 2-1. The TDOT State Transportation Improvement Program (STIP), Kingsport and Johnson City MTPOs' Long Range Transportation Plans (LRTP) and Transportation Improvement Programs (TIP) were reviewed to identify projects and studies in the vicinity of the I-26 study corridor. See Section 4.2 for a summary of these projects.

TDOT Plans

1. Region 1 Incident Management Plan (2018)
2. Tennessee Statewide Multimodal Freight Plan (2018)
3. State Transportation Improvement Program, 2017-2020 (2016)
4. 25-Year Long Range Transportation Policy Plan (2015)
5. State of Tennessee Strategic Highway Safety Plan (2014)

Kingsport MTPO Plans

1. 2040 Regional Transportation Plan (2017)
2. Regional ITS Architecture and Deployment Plan (2017)
3. 2017-2021 Transportation Improvement Program (2016)
4. Road Safety Audit Report (2014)
5. Regional Bicycle and Pedestrian Plan (2012)

Johnson City MTPO Plans

1. 2040 Metropolitan Transportation Plan (2018)
2. 2017-2020 Transportation Improvement Program (2016)
3. Regional ITS Architecture and Deployment Plan (2015)

Other Plans

1. Comprehensive Operational Analysis on Johnson City Transit (2017)
2. Urbanized Area Coordinated Plan (2017)
3. Washington County Thoroughfare Plan (2015)
4. Land Use and Transportation Plan (2014)
5. Comprehensive Plan 2020 (2012)
6. Parks and Recreation Master Plan, 2000 - 2020 (2012)
7. Elizabethton Land Use and Transportation Study (2011)
8. Jonesborough Economic Development and Transportation Study (2008)

3. Existing Data and Information

This section summarizes the transportation, demographic, land use, economic, and other data compiled for this study. When applicable, it presents snapshots of existing conditions in the I-26 corridor.

3.1 Transportation Capacity, Travel Demand, and Congestion

Available existing data and information were compiled to evaluate current and projected roadway capacity, demand, and congestion conditions in the I-26 study corridor.

Existing Highway Network

Highway Performance Monitoring System (HPMS) data was obtained from TDOT. The data included road names, cardinal direction headings, functional class, ownership, and traffic volumes. TDOT also provided Transearch data, which included highway and rail network geometrics, such as number of lanes and rail owner and classification. Intelligent Transportation Systems (ITS) facilities and resources were also provided by TDOT. In addition, the US Census 2010 Geographic Information System files for all streets in the study area were obtained to supplement local road information.

Existing Travel Volumes

Average annual daily traffic (AADT) volumes, truck traffic counts and American Transportation Research Institute (ATRI) origin-destination freight traffic volumes in the study area were provided by TDOT. 2017 AADT volumes along the I-26 corridor range from 26,560 vehicles per day near Kingsport and 64,230 vehicles per day near Johnson City, to 8,360 vehicles per day near the Tennessee-North Carolina state line. Traffic counts are available for other roadway facilities within the study area surrounding I-26. Trucks account for between 6% and 24% of all traffic volume on I-26, depending on the location in the study area.

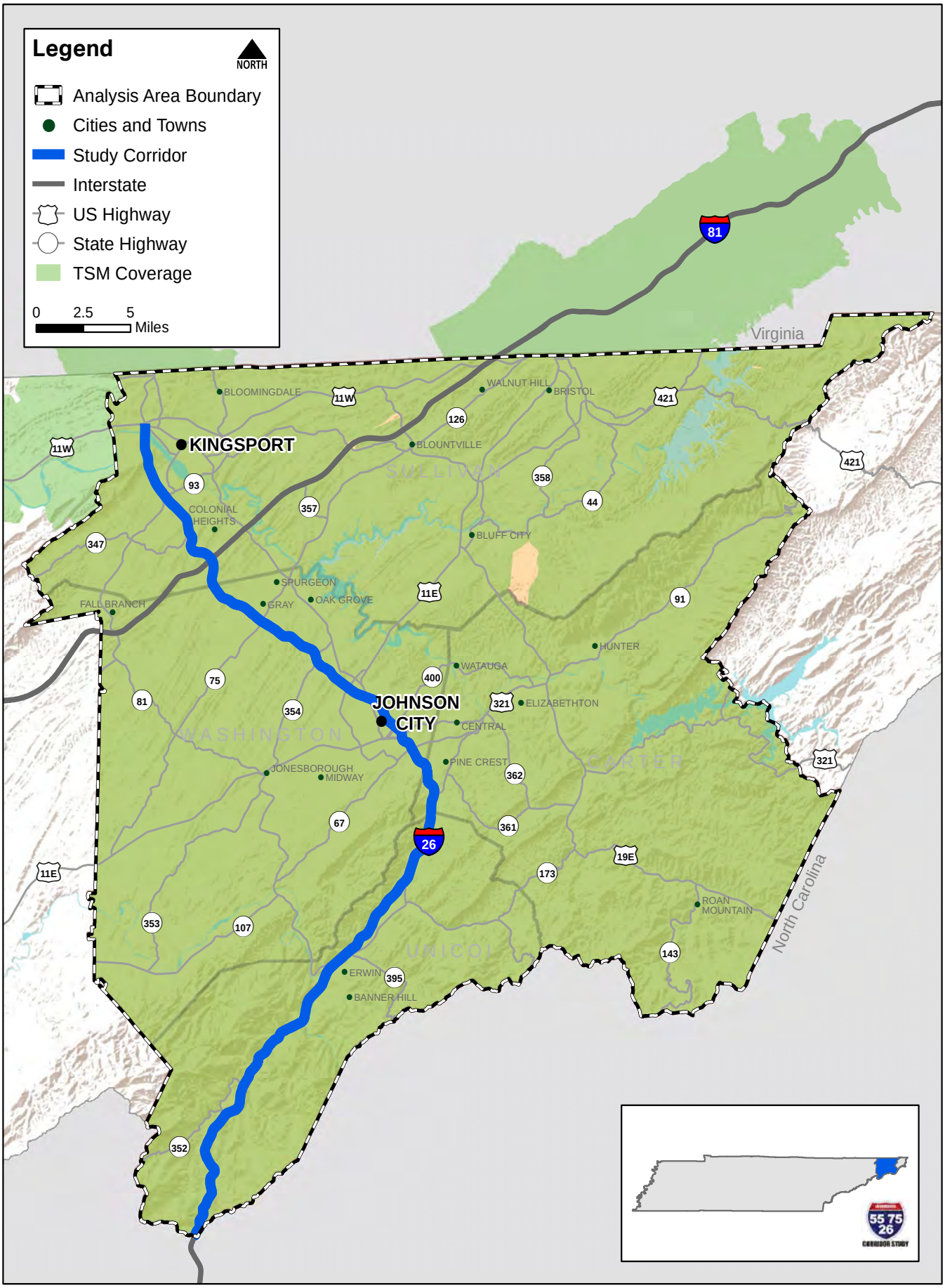
Existing Areas of Travel Demand Model Coverage

The I-26 study corridor traverses four counties -- Unicoi, Carter, Washington, and Sullivan -- and three Metropolitan Planning Organization (MPO) areas, including Kingsport, Johnson City, and Bristol. Each of the MPOs have developed their own travel demand models to estimate future travel demand and traffic conditions, and the data covers all four counties. TDOT has also develolped a statewide model that includes the areas contained in the MPO regions. Based on similar comparisons between the Tennessee Statewide Travel Demand Model (TSM) and the regional model outputs, TDOT and MPO staff agreed to utilize the TSM to analyze the existing and future travel demand within the study area. Figure 3-1 displays the TSM coverage for the study area.

For future year related tasks, the analysis will rely on the TSM outputs plus data from Transearch, Tennessee Roadway Information Management System (TRIMS), National Performance Management Research Data Set (NPMRDS), and HPMS. The Transearch data provides origin-destination traffic volumes for the study area. TRIMS is TDOT's transportation data platform, assembling over 30 years of highway transportation information, including highway data, traffic data, crash data, structure data, pavement data, railroad grade, and crossing data. NPRMDS provides vehicle probe-based speed and travel time for passenger cars and trucks in 5-minute increments on a daily basis. The HPMS is a national level highway information system that includes data on the extent, condition, performance, use, and operating characteristics of the nation's highways.

2017 AADT volumes provided by TDOT

Figure 3-1. I-26 TSM Coverage Area



Based on the existing traffic conditions, there are three areas of congestion along the I-26 corridor: Exit 17 (Boones Creek), Exit 20B, and between Exit 17 and 19.

3.2. System Operations and Maintenance

Numerous jurisdictions have responsibilities related to transportation system operations in the I-26 corridor. This section describes the coordination among those jurisdictions and the tools available to them.

Jurisdictions and Coordination

Federal, state and local agencies work together to maintain and operate transportation systems. Operations and maintenance tasks include:

- Emergency management planning
- Facility maintenance
- Signage
- Markings
- Inspections

Coordination of these efforts is undertaken by key agencies, including Tennessee state Regional Operations offices, Maintenance Policy Office, Office of Emergency Management, Environmental Compliance office, counties, and municipalities.

A regional operations office is located in each of Tennessee's four TDOT regions. For the I-26 corridor, the regional Operation Offices in Knoxville is responsible for directing operations and maintenance activities, including highway maintenance and repair, bridge inspection and repair, traffic and highway pavement markings, materials and testing, highway beautification, traffic engineering, incident response, and intelligent transportation systems.

TDOT's Regional Office in Knoxville is responsible for overseeing highway operations and maintenance in eastern Tennessee (Region 1).

In addition to the regional operations office, local maintenance contracts are used on paved surfaces within urban jurisdictions. These contracts are created between TDOT and local jurisdictions, including counties and municipalities, detailing responsibilities for maintenance of state owned roads.

The Maintenance Policy Office at TDOT is responsible for developing and refining the procedural guidelines for field maintenance activities. The office coordinates special maintenance programs such as the Vegetation Management Program. The Maintenance Policy Office works in conjunction with the Environmental Compliance Office on municipal stormwater and other environmental issues. Finally, the Office of Emergency Management works with the Tennessee Emergency Management Agency (TEMA) on emergency preparedness.

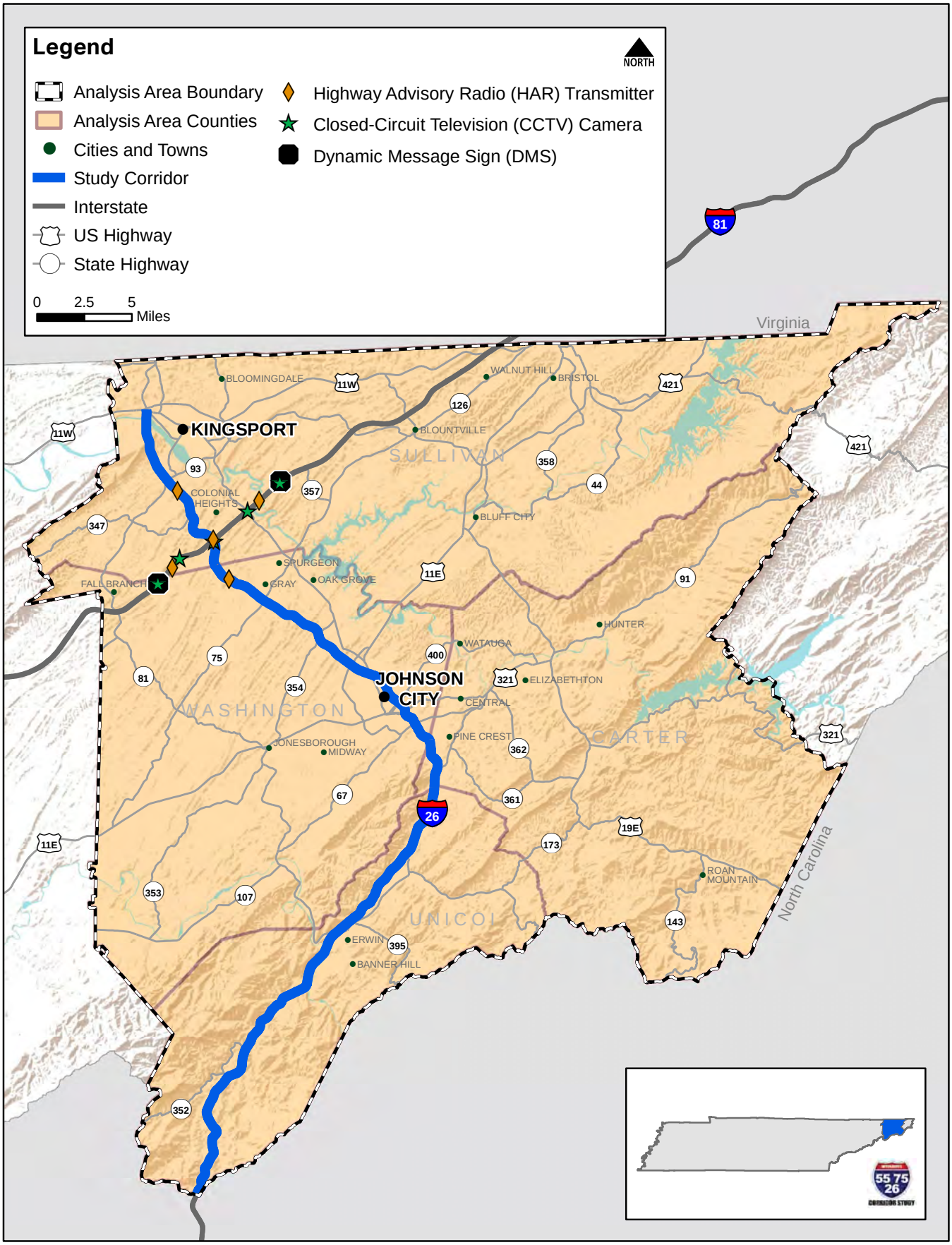
ITS Features and Operations

Intelligent Transportation Systems provide information which improves transportation safety, operations, and mobility. TDOT's ITS program, SmartWay, utilizes cameras and sensors to monitor interstate corridors throughout Tennessee. Approximately half of the I-26 corridor is rural in nature, and SmartWay technology is primarily concentrated in the urbanized areas. The following features are available on the I-26 corridor. The Closed-Circuit Television (CCTV) cameras and Highway Advisory Radio (HAR) transmitters are located near the I-81 interchange.

- CCTV cameras monitor congestion improve incident management capabilities
- HAR transmitters/beacons are used to broadcast messages to drivers
- TN 511 provides traffic information and weather conditions by phone
- SmartWay App provides real-time traffic information

Traffic conditions on I-26 in January 2019 as seen on the SmartWay App.

Figure 3-2. I-26 SmartWay Map



3.3. Multimodal Facilities and Services

The Tennessee transportation system represents all modes of travel - including walking, biking, and transit services. Each mode plays a vital role in meeting mobility and access needs.

Public Transportation and Transportation Demand Management

In the I-26 corridor, public transportation systems can be found in the form of on-demand paratransit services and fixed route bus services. Public transportation options are limited to the more densely populated areas of the study area including the cities of Kingsport and Johnson City (see Figure 3-3). Each of these cities offer a similar level of fixed route bus service and on-demand services to residents and visitors.

The Kingsport Area Transit Service (KATS) offers six fixed bus routes within the Kingsport area. While two of the four routes, Route 1 and 6, intersect I-26, none of the KATS routes run on freeway itself. Each route has one bus serving it, with trips every hour. These bus routes operate Monday – Friday from 7:30 am – 5:30pm. Fares for bus routes are $1.00 per ride. In addition to fixed route bus service, KATS also offers a dial-a-ride paratransit service, providing door-to-door next day service.

Johnson City Transit (JCT) offers seven fixed bus routes within the Johnson City area. While several of these JCT fixed bus routes intersect I-26, two routes run on the freeway itself:

- Orange North
- Silver

Each route has one bus running at a time and offers hourly service, with the exception of the Orange route which runs every 90 minutes. Most routes operate Monday through Friday from 6:15 a.m. to 6:15 p.m. and Saturdays from 8:15 a.m. to 5:15 p.m. Bus trips are $1.00 per ride, one way. In addition to the fixed route bus service, JCT offers an on-demand paratransit service called XTRA. This curb-to-curb service operates within the corporate limits of Johnson City, or within 3/4 mile of a JCT fixed route, whichever provides the farthest service to JCT patrons. Door-to-door service is provided on a case-by-case basis as needed. Fares for XTRA are $2.00 per one-way trip and $4.00 round trip.

Currently, there is one park and ride lot along the I-26 corridor located at the corner of North State of Franklin Road and West Oakland Avenue in Johnson City (see Figure 3-4). The Kingsport Metropolitan Transportation Planning Organization has recently undertaken a study to evaluate the feasibility of creating park and ride lots in the Kingsport metro area. The study will have recommendations including locations, destinations, shared costs and more.[1]

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities exist throughout the State of Tennessee on a variety of scales, including signed bikeways, sidewalks, crosswalks, bicycle lanes, and regional bicycle and pedestrian plans.

Tennessee also has extensive Bicycle Level of Service (BLOS) maps. The BLOS maps include all state routes and rank each according to available shoulder width and amount of traffic. State routes with wider shoulders and lower traffic are given a level of service A, while those with high traffic and narrower shoulders receive lower grades.

Over thirty individual bicycle routes are planned across the entire state. These routes are planned along state routes, linking key resources and cities. Planned state route bicycle routes can be seen in Figure 3-5. None of the planned state bicycle routes parallel the I-26 corridor. However, both the Chattanooga to Mountain City and Nashville to Bristol routes pass under the corridor. The Chattanooga to Mountain City planned state bicycle route runs along US 11E, SR 400 and SR 91 through Johnson City. The Nashville to Bristol planned state bicycle route runs along US 11W and SR 421 just north of Kingsport and Bristol.

1- Kingsport MTPO Executive Board Agenda July 26, 2018. Dated July 18, 2018.

Figure 3-3. I-26 Transit Routes

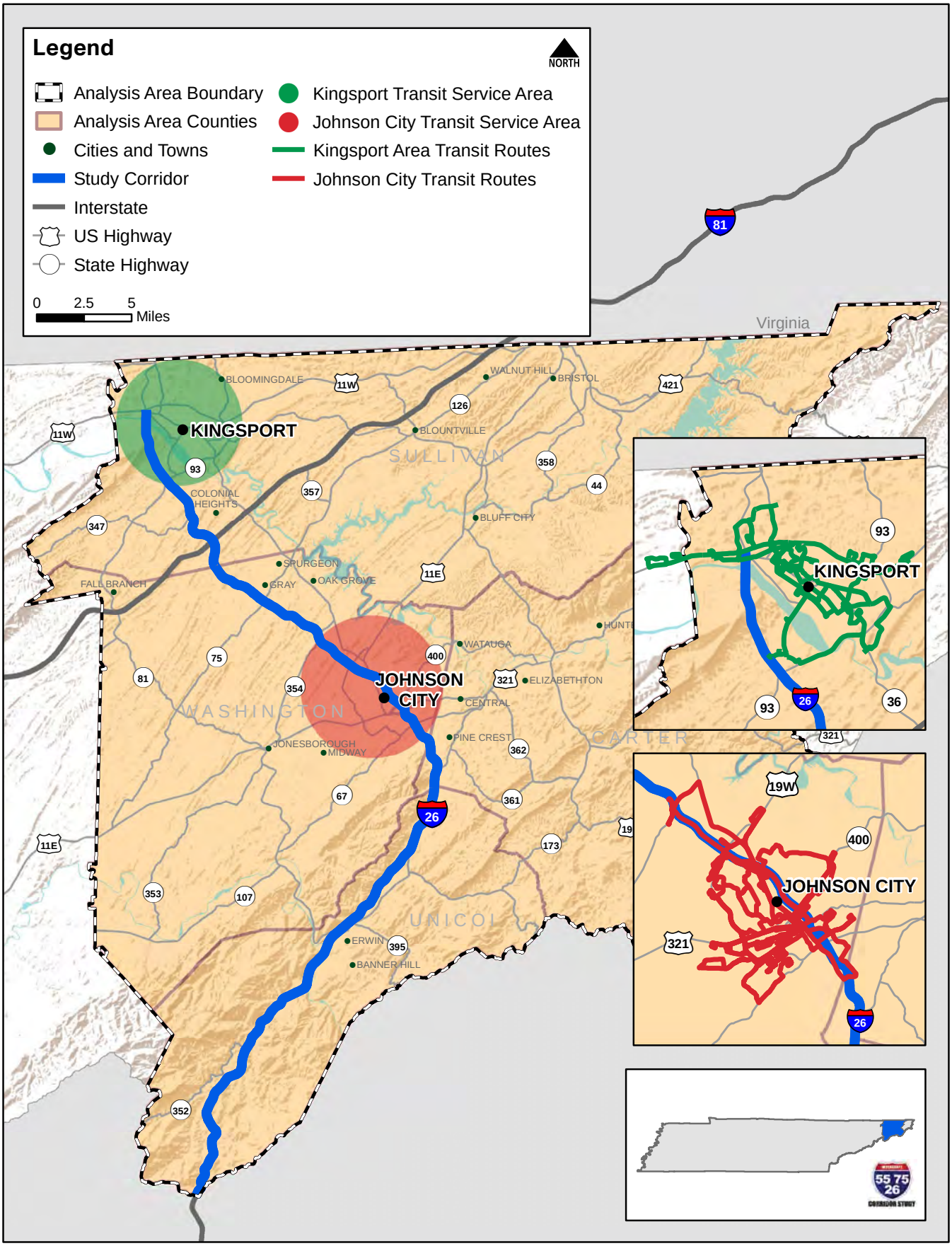


Figure 3-4. I-26 Park and Ride Lot

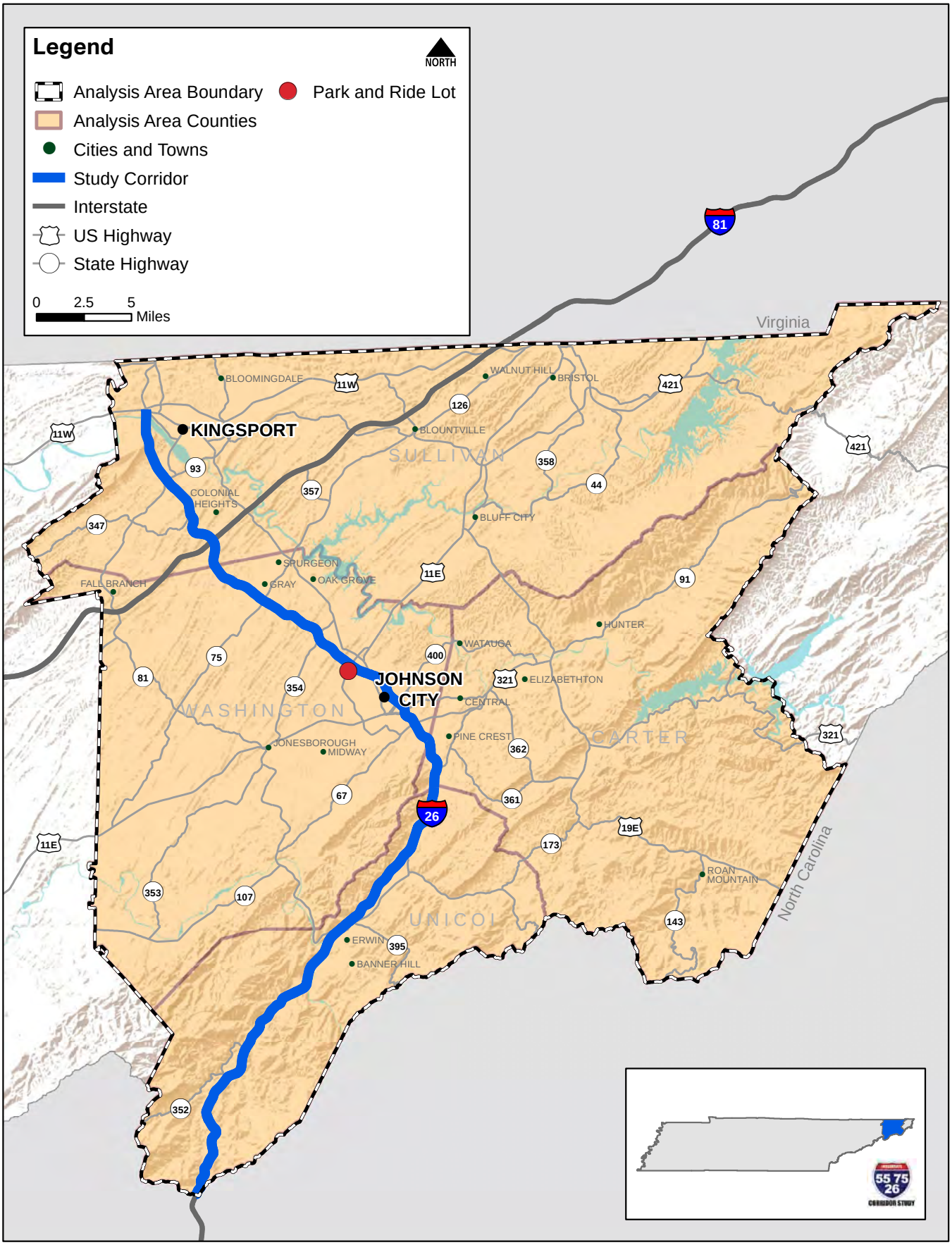
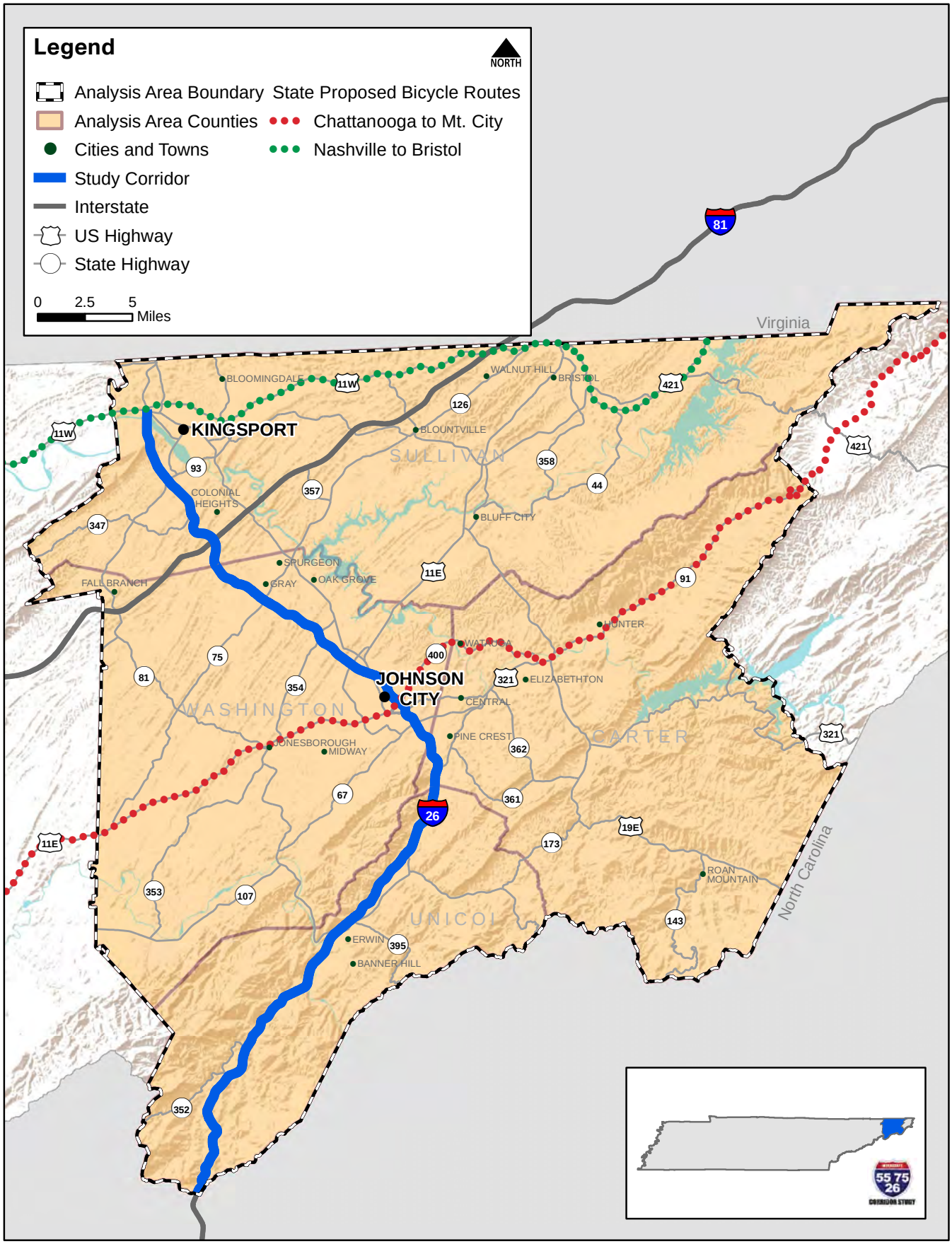


Figure 3-5. I-26 Planned State Route Bicycle Routes



Passenger Air and Rail Services

Two airports are located in the I-26 corridor, including the Tri-Cities Airport and Johnson City Airport. Tri-Cities Airport (TRI) is a regional airport serving Bristol, Kingsport, and Johnson City. Tri-Cities Airport is located approximately 10 miles to the east of the I-26 corridor. The airport has roughly 200,000 passenger boardings per year and is served by Delta, American Airlines and Allegiant.

Johnson City Airport is located approximately 10 miles east of the I-26 corridor, outside of Johnson City. This small airport offers no commercial flights and has one runway.

Currently, no fixed rail transit services exist in the I-26 study area.

3.4. Safety

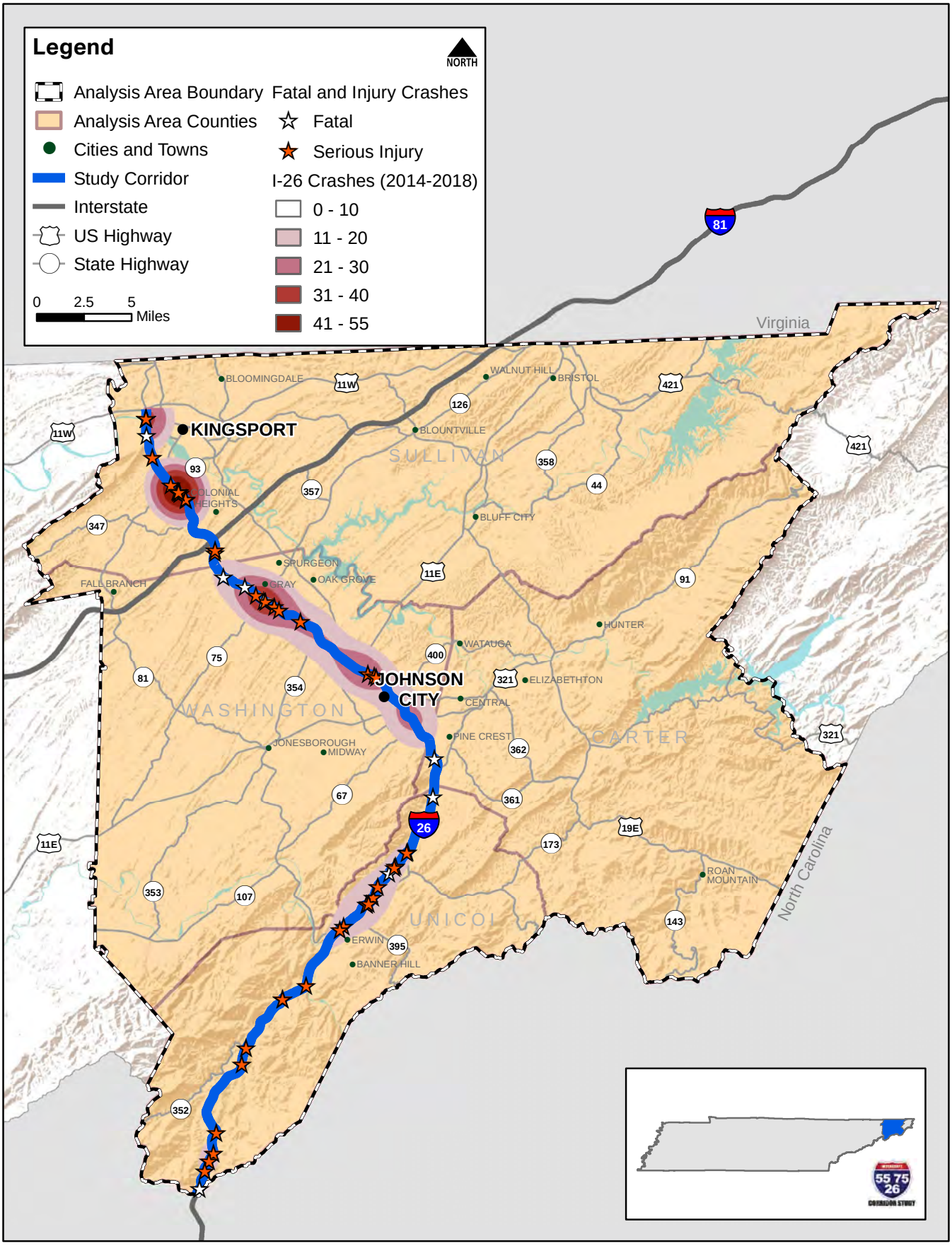
Extensive effort is being made by TDOT to improve highway safety statewide through the SmartWay program. However, message boards and cameras providing real time updates to users aren't located on the I-26 corridor. An analysis of past accidents can help guide development and evaluation of future projects and safety improvements.

Current and future efforts to improve safety will be evaluated as part of this study. For example, in recent years, TDOT has started to apply a pervious pavement overlay along sections of the interstae during scheduled resurfacing. This type of pavement dramatically reduces vehicle spray during and immediately after rain events - improving visability.

Tennessee is working to reduce traffic fatalities as part of the nation's vision Toward Zero Deaths®. This vision is a highway system free of fatalities.

In order to prioritize potential improvements, five-year (2014-2018) crash data will be evaluated along the I-26 corridor. Figure 3-6 shows corridor crashes by density. The highest number of crashes have occurred near interchanges, including State Route 93 and State Route 75. There are also noticeably more crashes between Kingsport and Johnson City than in the southern segment of I-26. Based on work travel trends, many people commute between the two cities, leading to elevated traffic volumes. Projects with the potential to improve operational safety to at these locations will be prioritized accordingly.

Figure 3-6. I-26 Crash Map



3.5. Freight Data and Models

Freight movement is an important element of a regional and national economy, as more efficient modes and routes enable improved logistics and result in reduced transportation costs. The existing and future freight flows in the region will be analyzed using the data sources described in this section as available to TDOT for the I-26 corridor.

Tennessee State Data Center

The Tennessee State Data Center includes data such as historical and projected county and metropolitan populations and growth rates. The annual county population projections include the period of 2016-2070. The projections are sourced from the Boyd Center for Business and Economic Research at the University of Tennessee, Knoxville and census data.[2]

Transearch

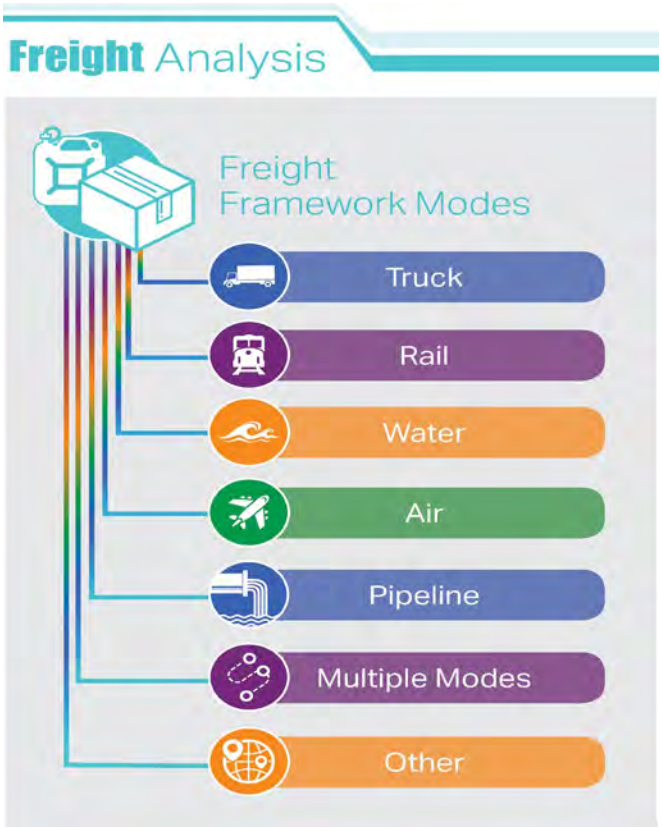
Transearch is a database for purchase, providing county-level data on freight movements. Provided by IHS Global Insight, it contains data from more than 100 industry, commodity, and proprietary data sources. Freight flows can be analyzed by origin, destination, commodity, and transportation mode. In addition, forecasts for up to 30 years are available. The forecast is based on employment, output, and consumption factors within each county. TDOT has purchased Transearch data for years 2016 and 2045.

Modes include truck, rail, water, and air, and metrics include tonnage, value, and units of shipment. Freight movements including inbound, outbound, through, and intra can be analyzed by county or for 179 economic areas. Volumes are reported for tonnage, units or truck counts, value, vehicle-miles traveled, and ton-miles.

Of particular relevance to the study is the ability to analyze volumes along individual corridors for over 340 commodities, providing a current and future look at modes and commodities using the I-26 corridor.

Freight Analysis Framework

The Federal Highway Administration's Freight Analysis Framework (FAF)[3] is a database containing data on value, tonnage, and ton-miles sorted by origin, destination, and commodity type for seven modes of transport: truck, rail, water, air, pipeline, multiple modes, and other/unknown. The freight movements are analyzed by total, domestic, and import or export flows. In addition to annual historical data from 2012-2016, forecasts are included in five-year increments for 2020 through 2045.



Origins and destinations can be specified by one of 123 FAF zones that include states, metropolitan areas, and areas outside of metropolitan areas. Data can be further delineated based on distance bands and the 44 commodity types.

Tennessee Statewide Travel Demand Model

The TSM includes a commodity flow freight and truck demand model. Origin-designation (OD) data from the American Transportation Research Institute (ATRI), and truck flows from Transearch and FAF (Version 3) were compared to understand which datasets provide the most reliable estimates. ATRI OD patterns and Transearch commodity flows are used and goods are classified using the Standard Classification of Transported Goods (STCG) two-digit codes.

The modes used in the TSM include truck, truck-rail intermodal, carload rail, water, and air. Mode shares are estimated by commodity, distance, TDOT Region, market, and access to modes (port, rail, both, or neither). Payload factors are used to convert freight tons into truck trips and also consider empty truck trips. County employment and socioeconomic data are used to estimate trip generation rates, and annual tonnage productions and attractions are based on 2012 and 2040 Transearch data.

2- The University of Tennessee Knoxville, Tennessee State Data Center, http://tndata.utk.edu/
3- Freight Analysis Framework Version 4, https://faf.ornl.gov/fafweb/Extraction0.aspx

Finally, commercial vehicles are modeled in the quick response truck model and include consideration of three main categories of vehicle: commercial passenger vehicles such as school busses and shuttles; freight vehicles such as mail delivery, trash collection, and parcel pickup/delivery; and services vehicles such as plumbers and utility maintenance services. The TSM shows truck traffic by facility and allows for the testing of new facilities.

3.6. Economic Access

Study area population and employment drives travel demand in the I-26 corridor. The locations of economic activity generators and the flows of goods and people between them are a key element in identifying existing and future transportation needs.

Population, Employment, and Demographics

An overview of key demographic data in the study area using information from the Tennessee Statewide Travel Demand Model (TSM) traffic analysis zones (TAZs) and from Woods & Poole Economics, Inc. is shown in Table 3-1. Woods & Poole data for 2010 were used for the population and employment numbers and the TSM (base year 2010) was used for household data.

In 2010, the study area had a population of over 355,800 people. There were over 149,500 households and more than 188,400 people were employed in the study area. Sullivan County made up 44 percent of the study area's population, followed by Washington County at 35 percent. Sullivan County also contained 46 percent of the study area employment, followed by Washington County at 41 percent. Figure 3-7 shows population density (people per square mile) in the study area by census tract.

According to OnTheMap, an online analysis tool provided by the US Census Bureau's Center for Economic Studies, there were a total of 65,867 people employed in Sullivan County in 2015.[4] Forty nine percent of those employed in Sullivan County lived in Sullivan County. Thirteen percent of Sullivan County workers came from Washington County, eight percent came from Hawkins County and four percent came from Carter County. In Washington County in 2015, there were a total of 56,311 people employed. Forty six percent of those employed in Washington County lived in Washington County. Seventeen percent came from Sullivan County, thirteen percent came from Carter County and approximately four percent came from Greene County. For Carter County, there were a total of 11,037 people employed in 2015. Fifty two percent of those employed in Carter County lived in Carter County. Sixteen percent came from Washington County, ten percent came from Sullivan County and two percent each came from Greene, Unicoi and Johnson counties. There were a total of 4,538 workers in Unicoi County is 2015. Forty five percent of those employed in Unicoi County lived in Unicoi County. Twenty one percent came from Washington County, ten percent came from Carter County and five percent came from Sullivan County. The remaining percentages of workers for all four counties in the study area came from other parts of Tennessee and Virginia.

Environmental Justice Populations

Title VI of the 1964 Civil Rights Act (Title VI) and Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations guide decision making about transportation investments utilizing Federal funding. Under Title VI, no person may be excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the basis of race, color, national origin, age, sex, disability or religion. Executive Order 12898 pertains to Environmental Justice (EJ), which is about identifying and addressing disproportionately high and adverse effects of proposed decisions on minority and low-income populations. TDOT must consider and mitigate environmental, health, social and economic impacts of any Federally-funded transportation projects on these populations.

Table 3-1. 2010 Population, Households, and Employment – I-26

	Population		Households		Employment	
County	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**
Carter	57,313	16%	24,197	16%	16,275	9%
Sullivan	156,820	44%	66,298	44%	87,756	46%
Unicoi	18,277	5%	7,726	5%	6,896	4%
Washington	123,423	35%	51,322	34%	77,570	41%
Total	**355,833**	**100%**	**149,543**	**100%**	**188,497**	**100%**

4- www.onthemap.ces.census.gov

Figure 3-7. I-26 Population Density

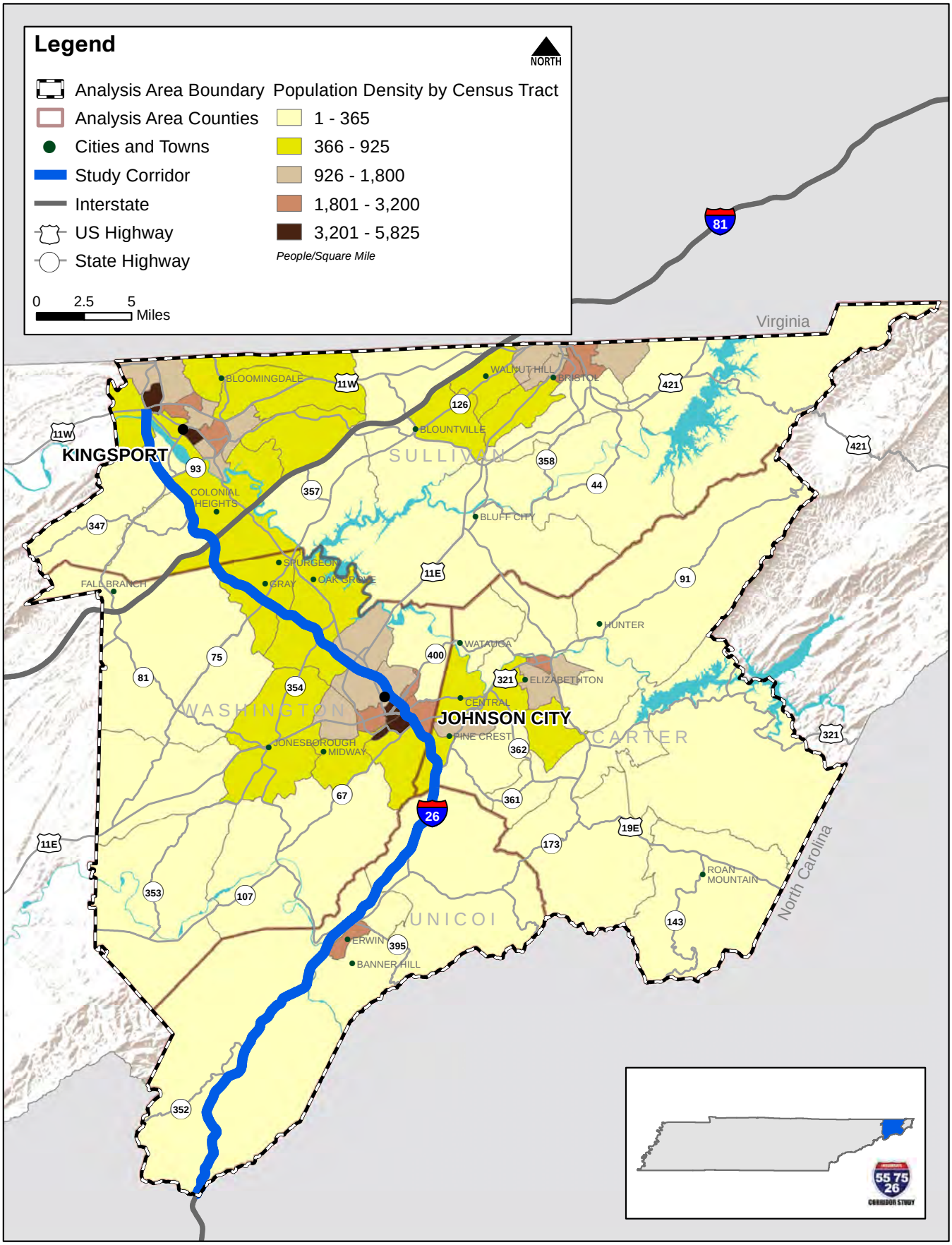


Figure 3-8. I-26 Minority Population

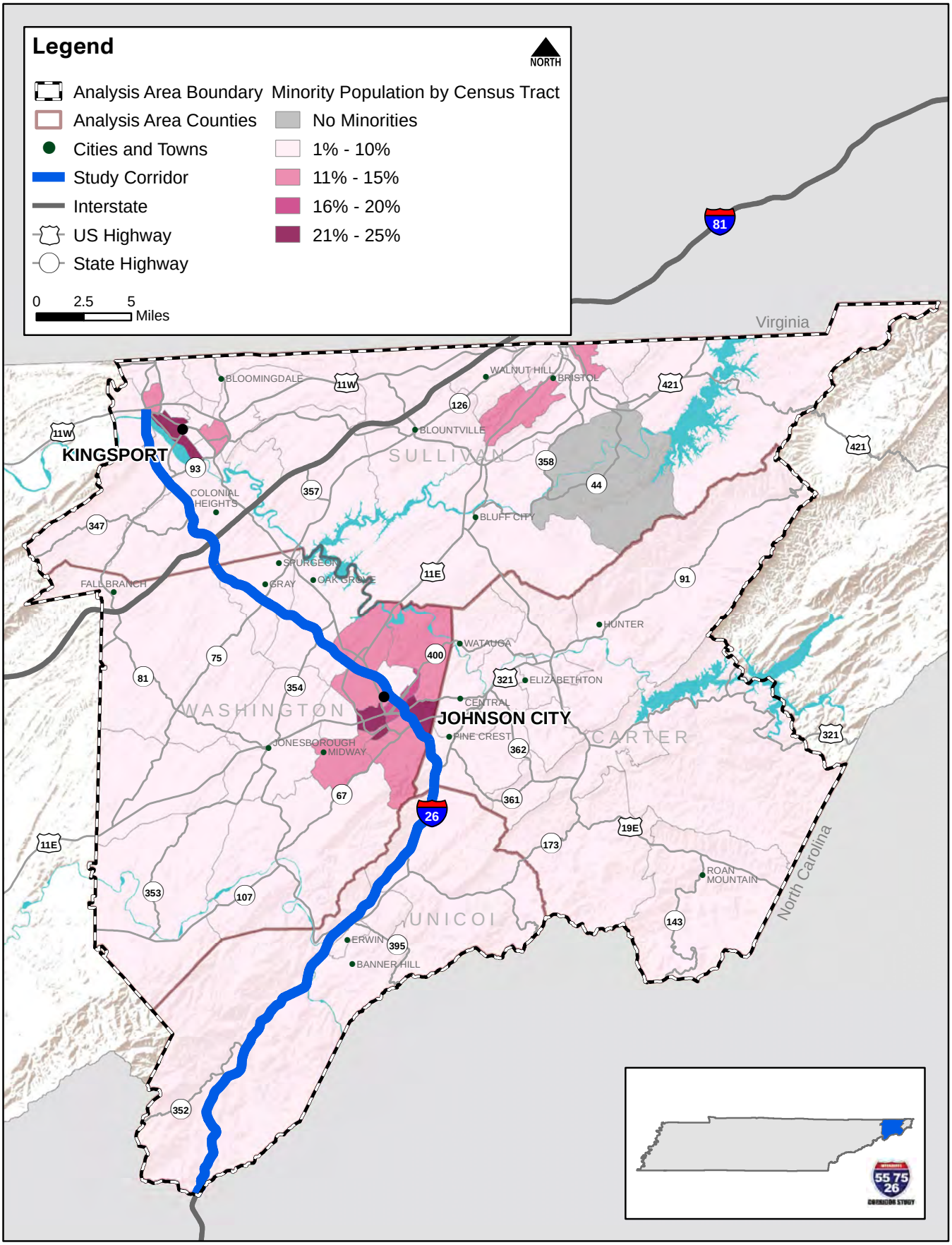
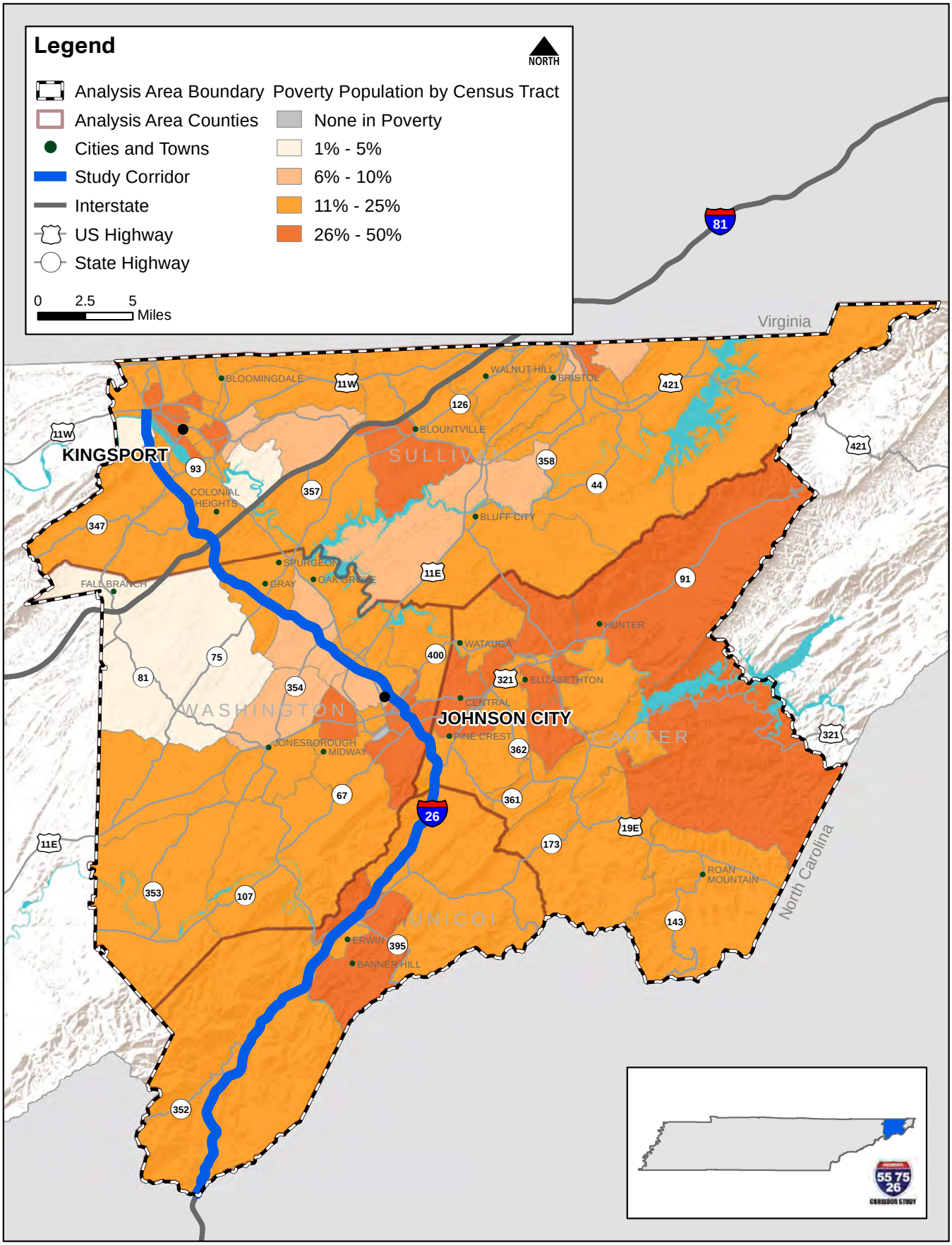


Figure 3-9. I-26 Poverty Population



Minority and low income populations in the study area have been mapped using data from the US Census Bureau's 2012-2016 American Community Survey (ACS). Minority populations are defined as non-white populations. To determine poverty, the US Census Bureau uses a set of money income thresholds that vary by family size and composition. If a family's total income is less than the family's threshold, then that family and every individual in the family is considered in poverty. For example, in 2016, the poverty threshold for an individual was $12,486. The poverty threshold for a family unit of four was $24,755. It should be noted that persons living in poverty represent the most extreme range of the region's low-income population. Persons whose income exceed the poverty thresholds may also be included in the populations covered by Executive Order 12898.

The ACS data showed the highest concentrations of minorities are found around Kingsport and Johnson City. The highest concentrations of people in poverty are found around Kingsport, Johnson City, and in Carter County. Figures 3-8 and 3-9 show percentages of minority and poverty populations by census tract.

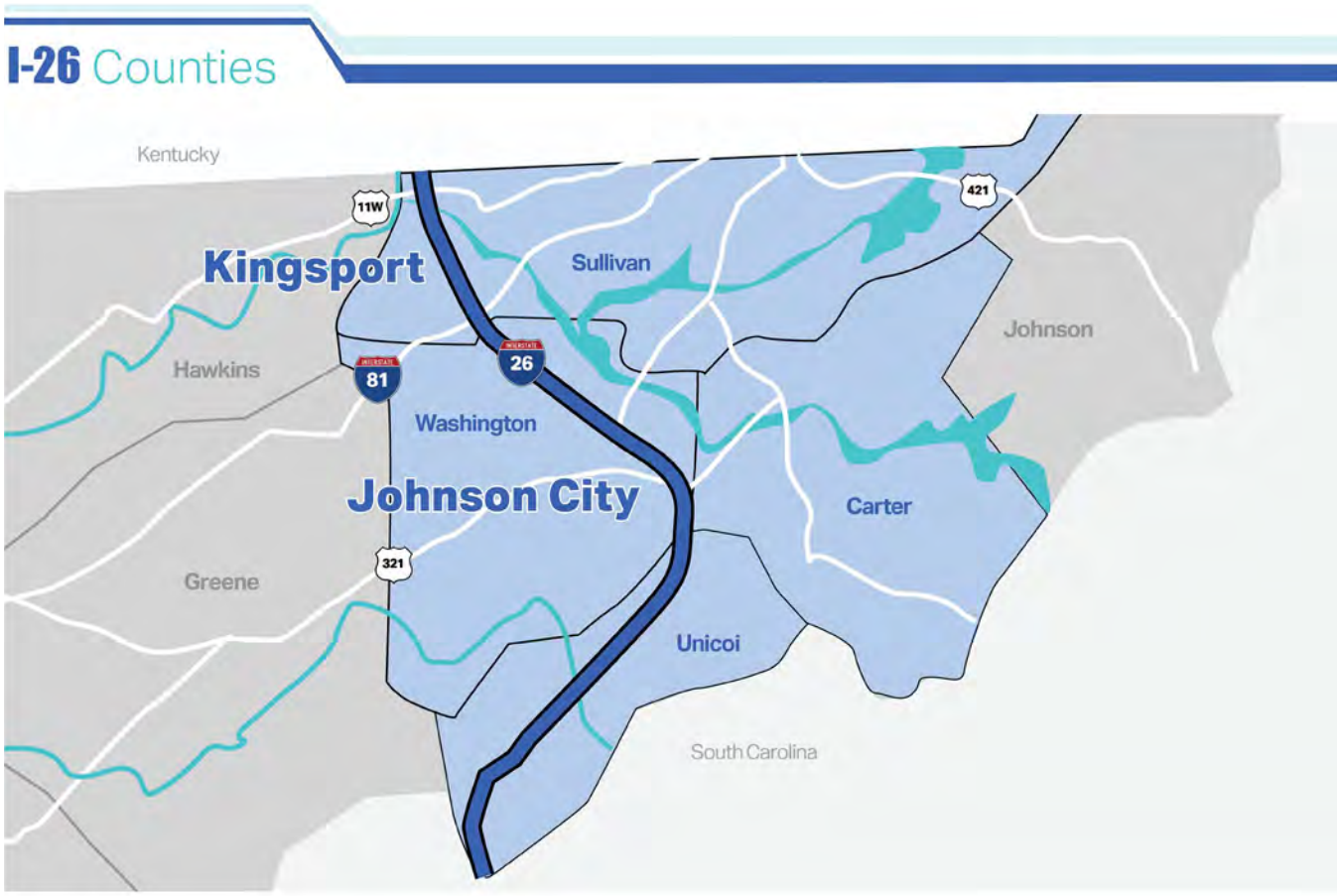
3.7. Land Use

Land use, development patterns, and geographical and cultural features of the study area impact the demand for, design, and operations of transportation facilities. This section describes those factors in the I-26 corridor and the data used to assess them in relation to potential transportation system improvements.

Land Use and Development

A high-level review of existing land use conditions as well as plans and policies was conducted in order to understand the existing character of the study area. In addition, this review helps to identify areas where major residential, commercial, or industrial growth is planned. For I-26, this evaluation includes the four counties included in the study area as well as the three municipalities that have direct access to I-26: Carter, Sullivan, Unicoi, and Washington Counties and the cities of Erwin, Johnson City, Kingsport, and Unicoi.

A comprehensive set of parcel-level land use data was collected from the Tennessee Comptroller of the Treasury's Office for counties surrounding the I-26 corridor. Land use is shown in Figure 3-10. The following paragraphs generally characterize study area land use by county.



Carter County. Carter County includes a small segment of the I-26 corridor, extending 2.7 miles through the easternmost portion of the county. The area surrounding the corridor includes mostly residential uses as well as some intermittent industrial, commercial, agricultural, and public uses. There is a single interchange within Carter County; it provides access to the Borla Performance Industries manufacturing plant.

Sullivan County. The northern portion of the I-26 corridor traverses approximately 9.8 miles through the eastern portion of Sullivan County. In this area, the freeway is predominantly surrounded by agricultural and rural residential land uses. In addition, there are a number of parcels dedicated to Public/Semi-Public uses, such as the Bays Mountain recreational area, Commercial uses, such as the Meadowview golf course and conference center, and Industrial uses, such as the Eastman Chemical Company. There are six interchanges along I-26 in Sullivan County. While largely agricultural in nature now, the I-26/I-81 interchange, often referred to as the Tri-Cities Crossing, holds significant development potential, specifically for commercial and industrial developments, given its access to the Carolinas, Virginia, and the western portion of Tennessee.

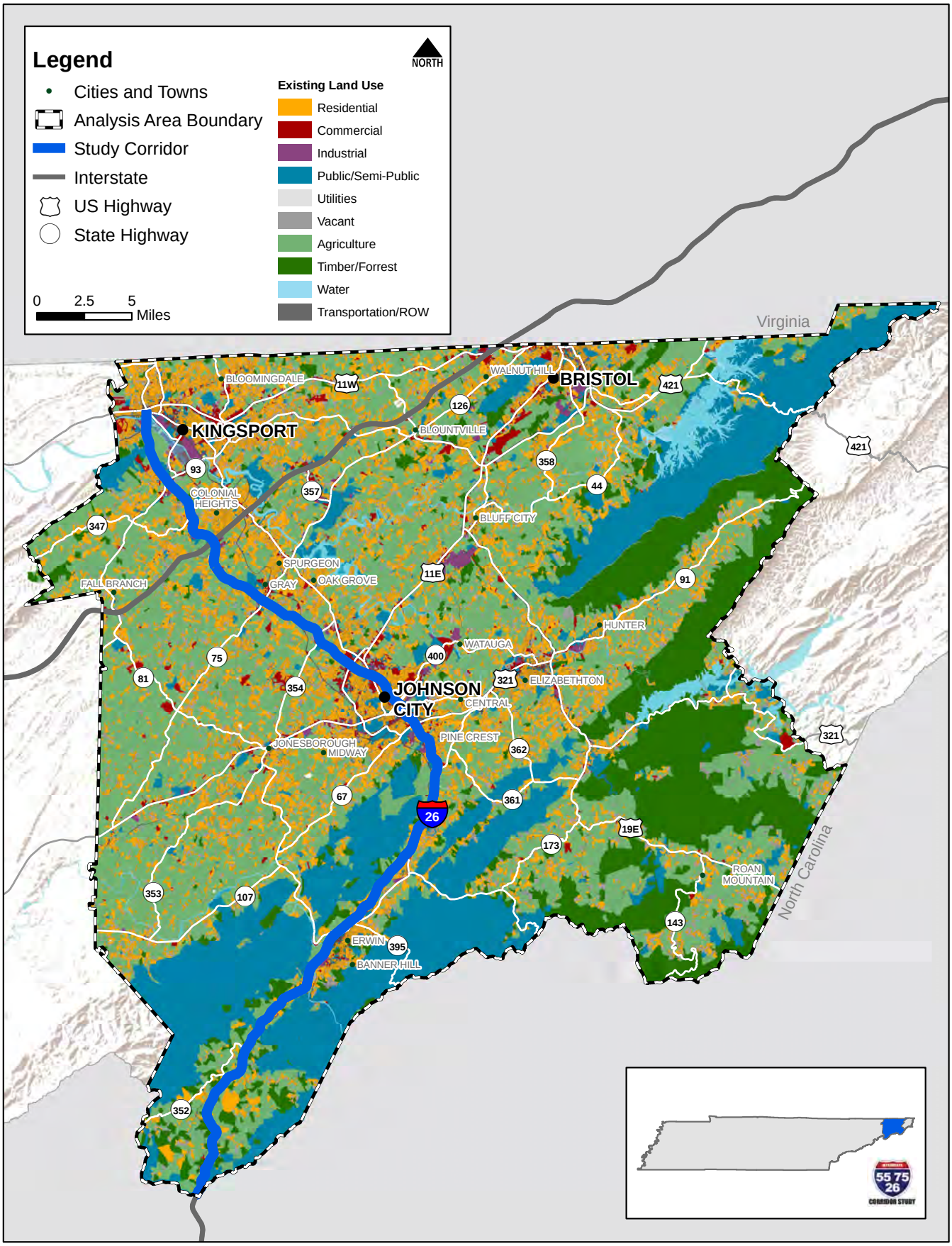
Unicoi County. The I-26 corridor extends approximately 26.7 miles through the center of Unicoi County. Due to topography constraints, I-26 in this area is primarily surrounded by undeveloped land, including timber and agricultural parcels. Even more significant is the expanse of public and semi-public land included as part of the Cherokee National Forest. The relatively limited residential, commercial, and industrial development along the corridor is primarily concentrated near the town of Erwin. There are eight interchanges along I-26 in Unicoi County.

Washington County. The Washington County portion of the I-26 corridor includes approximately 15.1 miles of interstate facility, nearly all of which are located within the limits of Johnson City. Residential land uses are predominate throughout the county. Near the northern county boundary, there are a number of commercial and industrial parcels in Gray, a rural suburb, that are served by an I-26 interchange, which also provides access to the Tri-Cities Airport in neighboring Sullivan County. Land surrounding I-26 transitions from a largely agricultural/residential mix to more commercial/residential mix near the freeway itself. There are seven additional interchanges in the Johnson City limits. Commercial developments are found near interchanges. Additional interchanges

Table 3-2. Existing Land Use – I-26

Land Use Category	4-County Study Area ~751,000 acres	County Level			
		Carter County ~145,000 acres	Sullivan County ~275,000 acres	Unicoi County ~119,000 acres	Washington County ~211,000 acres
Residential	20%	21%	22%	9%	23%
Commercial	2%	1%	3%	0%	3%
Industrial	1%	0%	1%	0%	1%
Public/Semi-Public	21%	10%	19%	57%	13%
Agricultural/ Timber	42%	51%	39%	26%	49%
Utilities/ Transportation	11%	13%	12%	7%	12%
Water	2%	3%	4%	0%	1%

Figure 3-10. I-26 Existing Land Use



in and around downtown Johnson City also serve industrial developments as well as provide access to East Tennessee State University, the James H. Quillen VA Medical Center, and Johnson City Medical Center.

Table 3-2 shows the distribution of land use within the four-county study area as well as within each individual county. As seen in the table, the land use composition is fairly consistent across the four counties, with Unicoi County showing large proportions of public and semi-public land due to the presence of Cherokee National Forest.

Some of the larger municipalities and counties within the corridor study area have undertaken the development of a comprehensive plan, land use plan, or a land use and transportation plan which addresses existing land use conditions within their jurisdictions and desired growth and development within their community. These plans lay the foundation for desired growth and development and ultimately affect the distribution of transportation resources. Notable comprehensive plans in the study area include those for Unicoi County (2018), Johnson City (2008), Town of Unicoi (2018), and Town of Erwin (2018).

Environmental Features: Wetlands

Wetlands are important natural resources across the state and benefit Tennessee ecologically, socially, and economically. They provide habitat for plants and wildlife, recharge groundwater, provide clean drinking water, support recreational activities, and reduce flooding. Proposed improvements should avoid wetlands when possible and minimize or mitigate impacts when avoidance is not possible.

The US Fish and Wildlife Service (USFWS) is the federal agency that provides wetland information to the public. The latest wetlands database (updated May 2018) was obtained from the USFWS National Wetlands Inventory (NWI) for the entire state of Tennessee. For the purpose of this planning level study, this database is sufficient to draw general conclusions about avoiding or minimizing impacts to these resources; however, additional field surveying would be necessary for design activities.

Cultural Features: Historic Resources

Historic resources are important to the state and must be avoided when possible. Historic resources are sites, buildings and structures that are significant in American history. Preserving these resources is beneficial to a community's culture and local economy. Tennessee has a rich history that can be witnessed and studied through its historic structures and places.

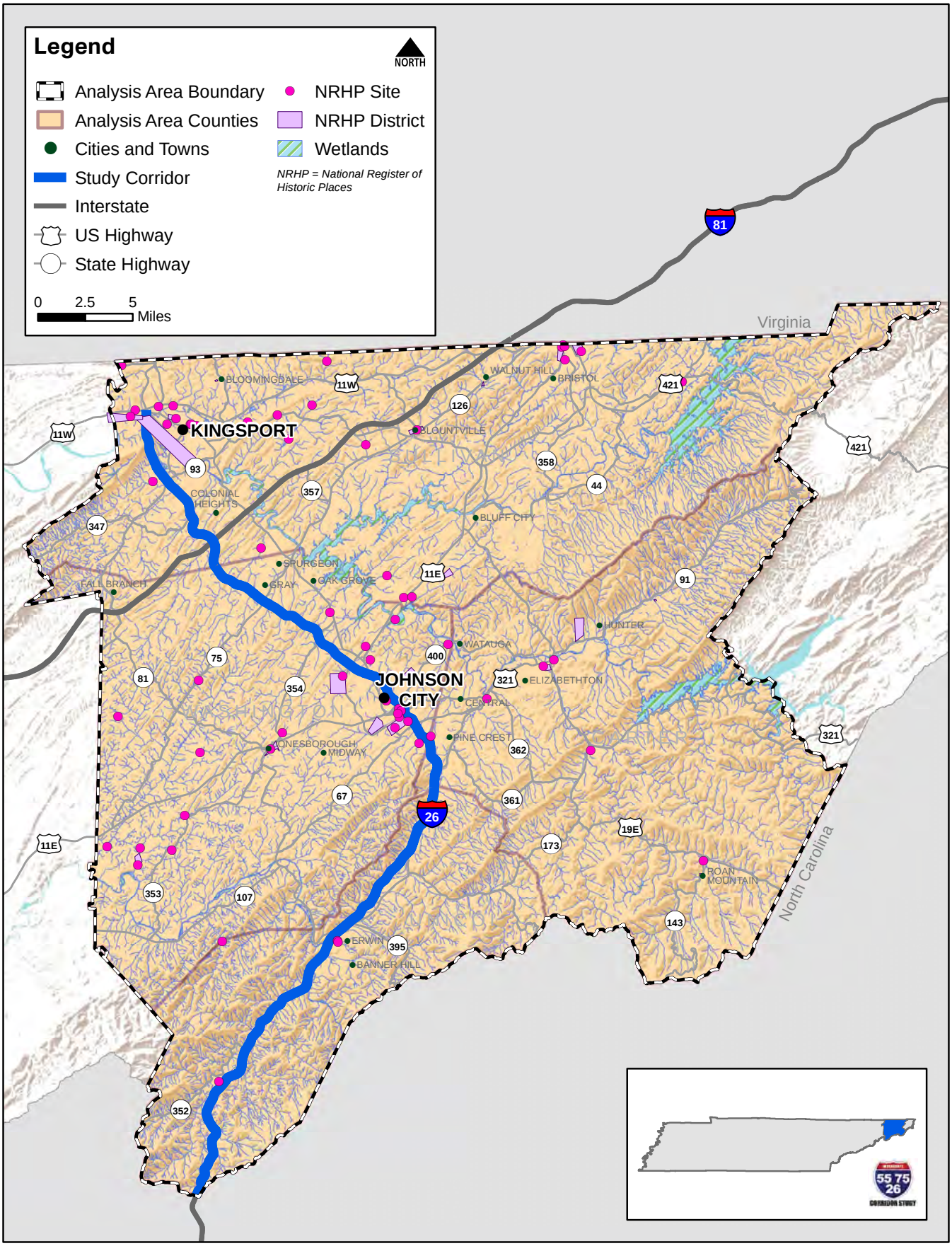
The US National Park Service is the agency that houses the National Register of Historic Places (NRHP), the official list of the country's historic places worthy of preservation. The State of Tennessee also has a list of state-owned historic resources, which is maintained by the Tennessee Historical Commission. This commission is the State Historic Preservation Office (SHPO) for Tennessee. Three historic sites in the I-26 corridor study area are listed on the historical commission's state historic sites list: the Chester Inn in Jonesborough (Washington County), the Rocky Mount log house in Piney Flats (Sullivan County) and the Tipton Haynes site in Johnson City (Washington County). For the purpose of this planning level study, this information is sufficient; however, additional field surveying of the Tipton Haynes site would be necessary for design activities because this site is located within a 1/2 mile of I-26. The Chester Inn and Rocky Mount sites are located approximately seven miles and five miles, respectively, from I-26. Figure 3-11 shows wetlands and historic resources data for the I-26 corridor study area.

The Chester Inn in Washington County is a state historic site. Photo credit: TN.gov

The Rocky Mount log house in Sullivan County is a state historic site.
Photo credit: tnvacation.com

The Tipton Haynes site in Washington County is a state historic site.
Photo credit: tipton-haynes.org

Figure 3-11. I-26 Wetlands and Historic Features



4. Forecast Future Conditions

As a long-range plan to guide future investments in the transportation system, this study relies not only on an analysis of existing conditions in the I-26 corridor, but evaluates forecasted future conditions. Population and employment growth will affect transportation demand in the future, and planned transportation improvements will alter the operations of the system. This section documents data used to understand potential future conditions in the corridor.

4.1. Population and Employment Growth

Socioeconomic data projections were examined to determine population, household and employment growth for 2020, 2030, and 2040. Population and employment data are from Woods & Poole, while household data are from statewide and regional travel demand models. Table 4-1 shows the projected population, household, and employment within the study area. Figures 4-1, 4-2 and 4-3 show population, household, and employment changes in the study area from 2010 to 2040.

By 2040, the study area is projected to grow in population by 15 percent from approximately 355,800 people to approximately 408,300 people. Washington County is projected to have the largest increase in population (29 percent), households (30 percent) and employment (48 percent) of the counties in the study area from 2010 to 2040. Population, households and employment are projected to increase for all four analysis area counties from 2010 to 2040.

Washington County is projected to have the largest increase in population, households, and employment of the counties in the study area.

According to survey responses from the corridor planning organizations, despite a relatively modest growth outlook, scenarios vary throughout the region.[5] Residential development is anticipated in northern Washington County, and commercial growth is expected near around Johnson City. Redevelopment of older buildings in the downtown Johnson City area is driving increased employment, and some industrial development is also expected near the freeway corridor.

5-Project Advisory Committee Survey, December 2018

Table 4-1. Population, Households, Employment (2020, 2030, 2040) – I-26

2020	Population			Households			Employment		
County	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010
Carter	58,110	16%	1%	26,188	16%	8%	18,163	9%	12%
Sullivan	158,478	43%	1%	69,029	43%	4%	95,829	46%	9%
Unicoi	17,911	5%	-2%	7,937	5%	3%	7,114	3%	9%
Washington	132,608	36%	7%	56,463	35%	10%	87,281	42%	13%
Total	**367,107**	**100%**	**3%**	**159,617**	**100%**	**7%**	**208,387**	**100%**	**11%**

2030	Population			Households			Employment		
County	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010
Carter	62,260	16%	9%	28,189	17%	16%	20,035	9%	23%
Sullivan	162,909	42%	4%	71,778	42%	8%	103,244	44%	18%
Unicoi	18,378	5%	1%	8,153	5%	6%	7,630	3%	11%
Washington	146,295	37%	19%	61,621	36%	20%	101,651	44%	31%
Total	**389,842**	**100%**	**10%**	**169,741**	**100%**	**14%**	**232,560**	**100%**	**23%**

2040	Population			Households			Employment		
County	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010	Total	Percent	Increase from 2010
Carter	65,731	16%	15%	30,204	17%	25%	21,411	10%	32%
Sullivan	165,012	40%	5%	74,547	41%	12%	107,561	43%	23%
Unicoi	18,581	5%	2%	8,372	5%	8%	7,992	3%	16%
Washington	159,031	39%	29%	66,797	37%	30%	114,512	43%	48%
Total	**408,355**	**100%**	**15%**	**179,920**	**100%**	**20%**	**251,476**	**100%**	**33%**

Figure 4-1. I-26 Change in Population (2010 to 2040)

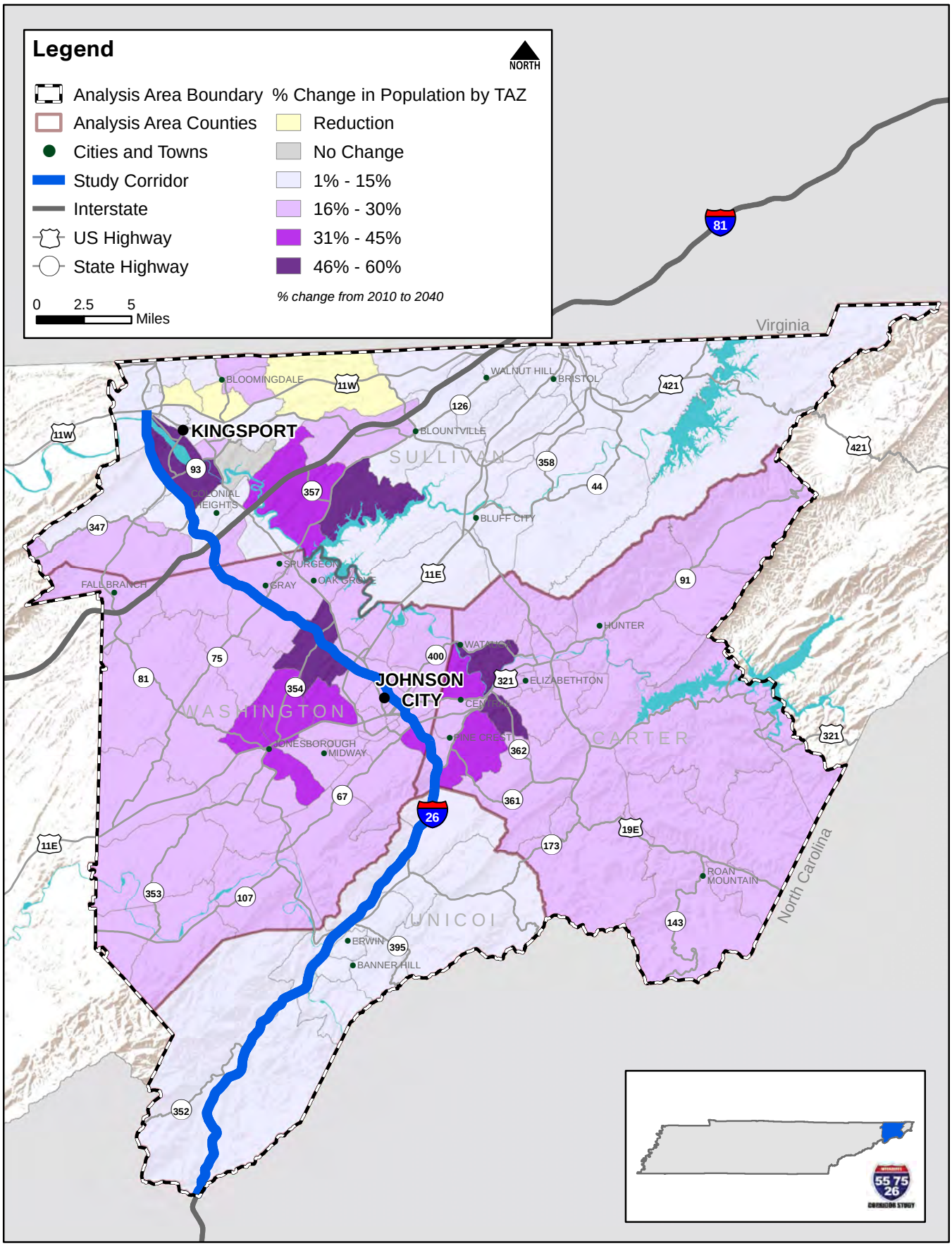


Figure 4-2. I-26 Change in Number of Households (2010 to 2040)

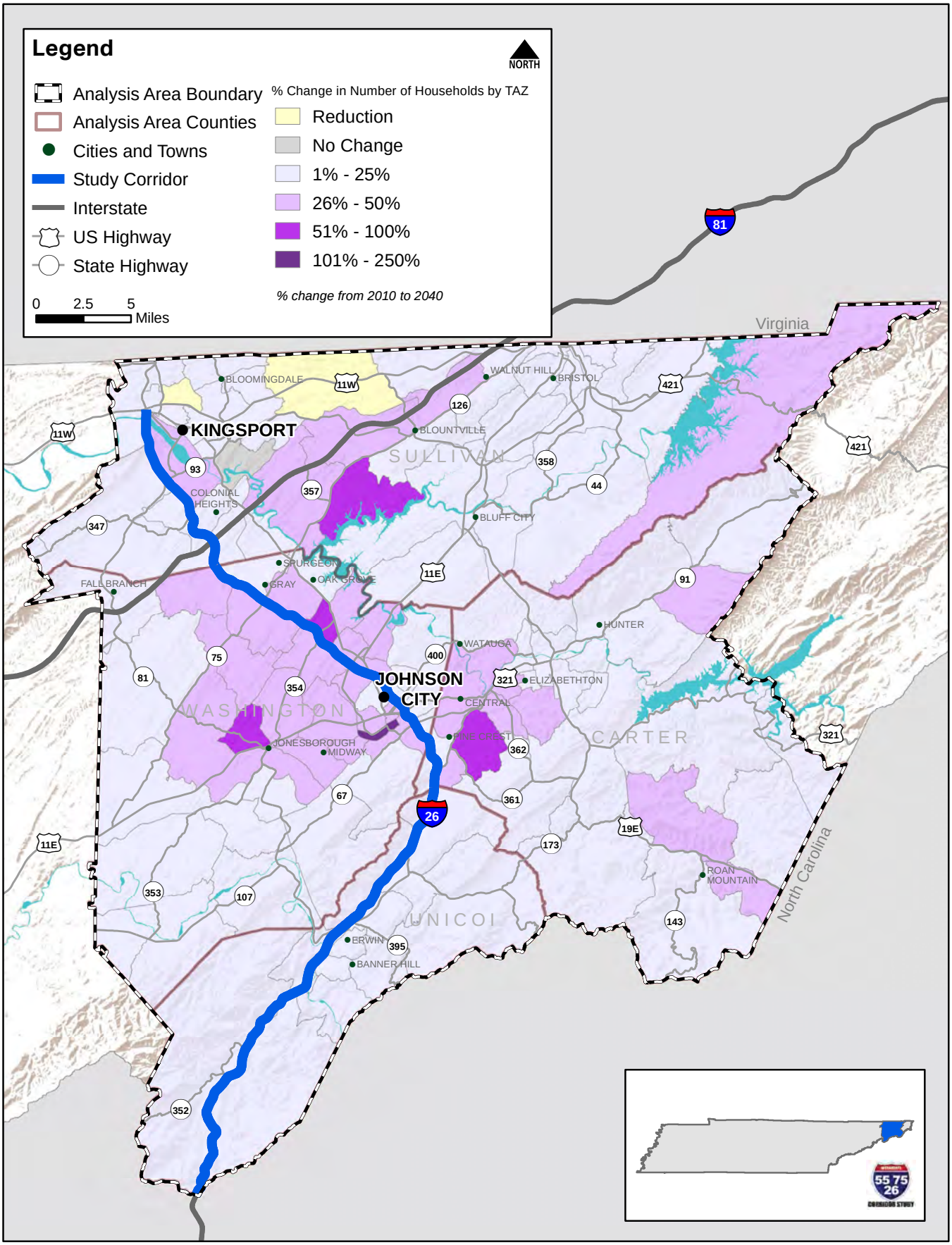
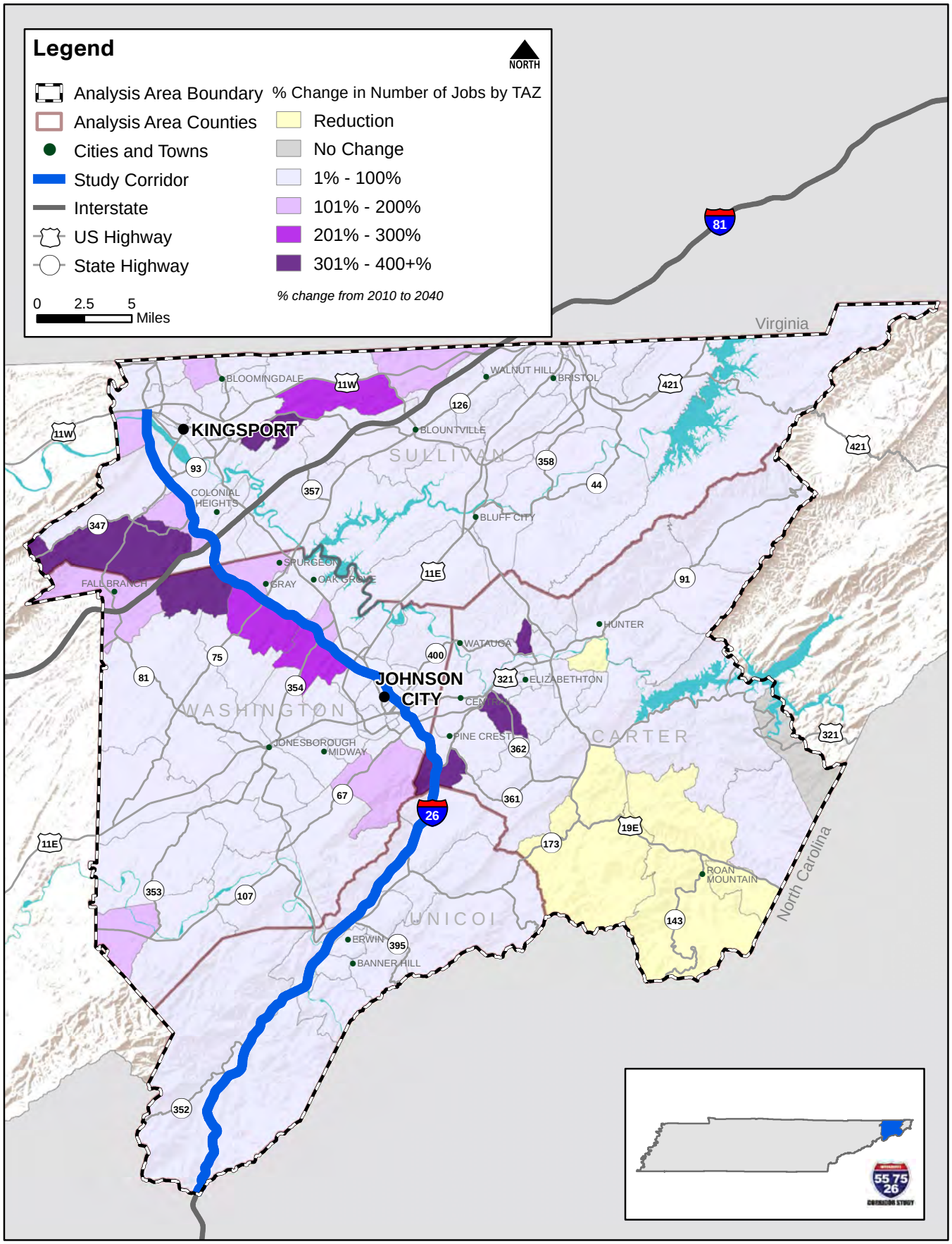


Figure 4-3. I-26 Change in Number of Jobs (2010 to 2040)



4.2. Planned Transportation Projects

TDOT continues to improve capacity and safety as needed along the I-26 study corridor. In February 2018, the 2045 Metropolitan Transportation Plan (MTP) was adopted by the Johnson City Transportation Planning Organization (TPO) Executive Board. In June 2017, the Kingsport Metropolitan Transportation Planning Organization (KMTPO) Executive Board adopted the 2040 LRTP. In addition to these documents, MPO Transportation Improvement Programs (TIPs) and the TDOT State Transportation Improvement Program (STIP) were reviewed to identify the planned and programmed projects along the I-26 study corridor.

Projects along the I-26 study corridor includes widening the existing roads, construction of new roadways and the reconstruction of interchanges. The full list of these planned transportation projects are summarized in Table 4-2. Figures 4-4, 4-5, and 4-6 show the distribution of the projects. Some of the MPO projects for which a need has been determined but no funding source has yet been identified are not included in this report, except fiscally constrained projects.

Table 4-2. Planned and Programmed Projects – I-26

Source	ID	Route	Project Limits	Improvement	Cost	Year	Lead Agency/ Funding Type	LRTP# or TIP #
Johnson City MTPO FY 2017 - 2020 TIP and 2045 MTP	1	I-26	Interchange at SR-354 (Exit 17)	Interchange modification	$14,900,000	2019	NHPP	TIP# 90115
	2	SR381	Knob Creek Rd to Browns Mill Rd	Adaptive Signal Control	$290,000	2019	STBG-Local	TIP# 2013-02
	3	I-26	Interchange at SR-67 (Exit 24)	Widening (auxiliary lane)	$4,714,965	2018	ACNHPP	TIP# 90200
	4	Boones Creek Rd (SR 354)	I-26 to Highland Church Rd	Widen 2 to 4 lanes	$31,200,000	2045	S-STBG/ L-STBG	RTP# 5
	5	N. State of Franklin (SR 381)	I-26 to Knob Creek Rd	Widen 4 to 6 lanes	$29,200,000	2045	NHPP	RTP# 9
	6	Bob Jobe Rd Extension	Ford Creek Rd to Center St	Construct new 2 lane roadway	$11,300,000	2045	Local	RTP# 22
	7	Okolona Rd (SR 359)	I-26 to Okolona Rd (SR 359)	Realignment	$4,600,000	2025	S-STBG	RTP# 25
Kingsport MTPO 2040 LRTP	8	Netherland Inn Road	Center Street (SR-36) to Ridgefields Road	Widen 2 to 3 lanes	$9,030,000	2040	Local	RTP# L7
	9	Stone Drive (US-11)	Gibson Mill Road to Deneen Lane	Coordinate signal system	$190,000	2025	NHPP	RTP# L62
	10	I-26	John B. Dennis (SR-93) to I-26 Exit 6 (SR-347 (Rock Springs Road)	Add eastbound truck climbing lane	$2,790,000	2025	NHFP	RTP# L65
	11	I-81	I-26 (Exit 57) to Virginia State Line	ITS expansion	$1,780,000	NA	IMPROVE	RTP# L70
	12	I-26	Interchange at I-81	Add capacity at intersections including study of frontage roads along interstates	$6,320,000	2040	NHPP	RTP# P9

Figure 4-4. I-26 Planned Interchange Projects

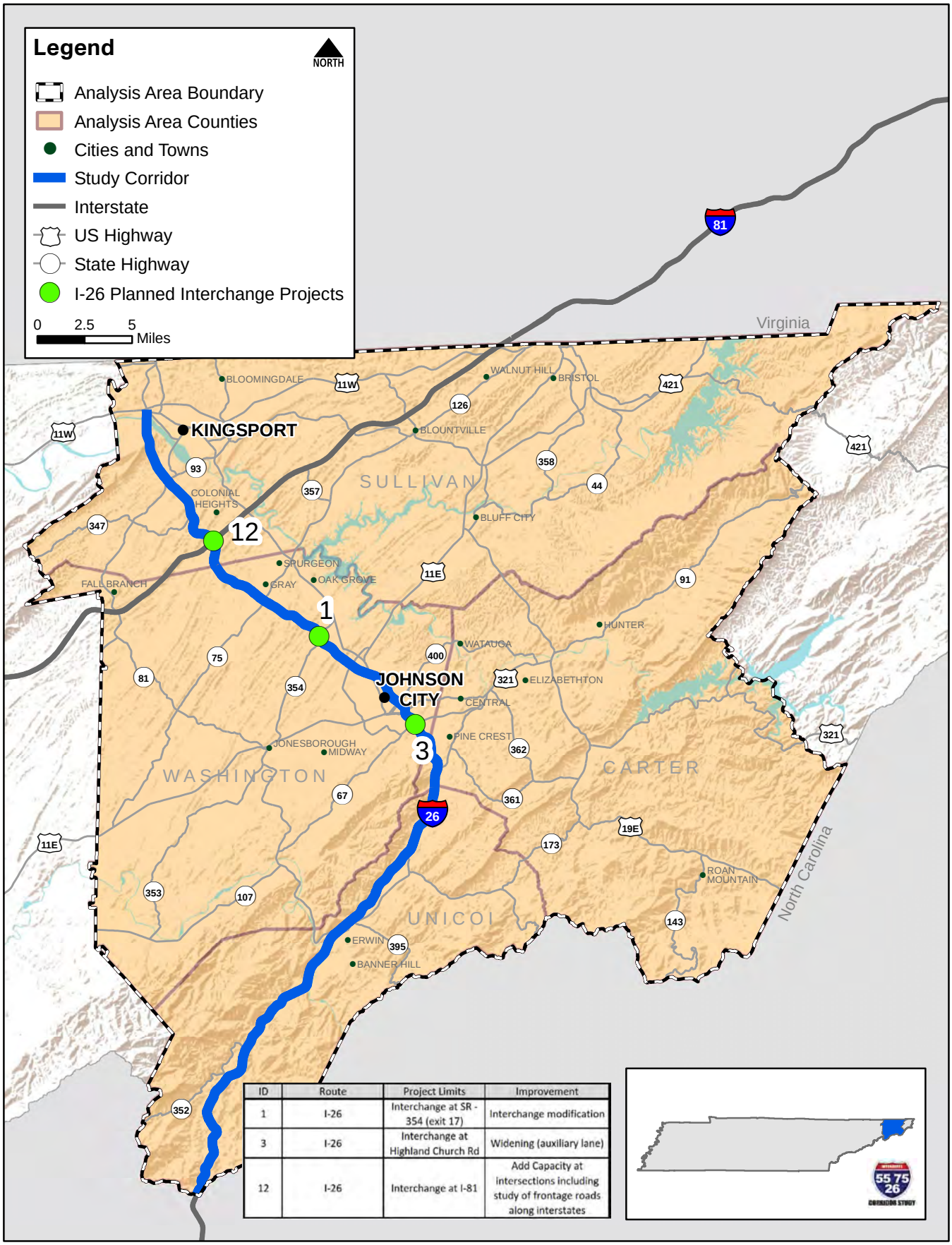


Figure 4-5. I-26 Planned Capacity and Reconstruction Projects

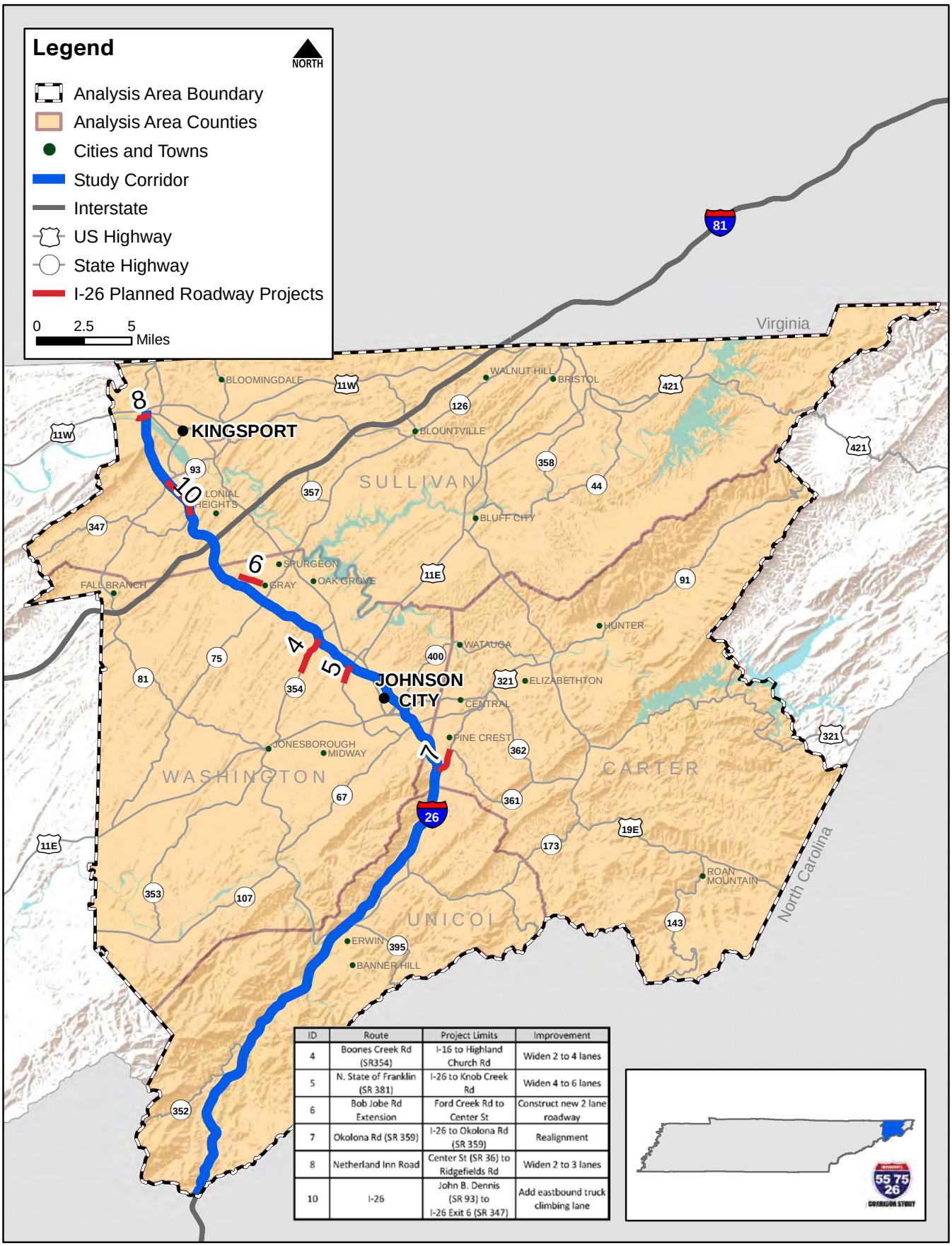
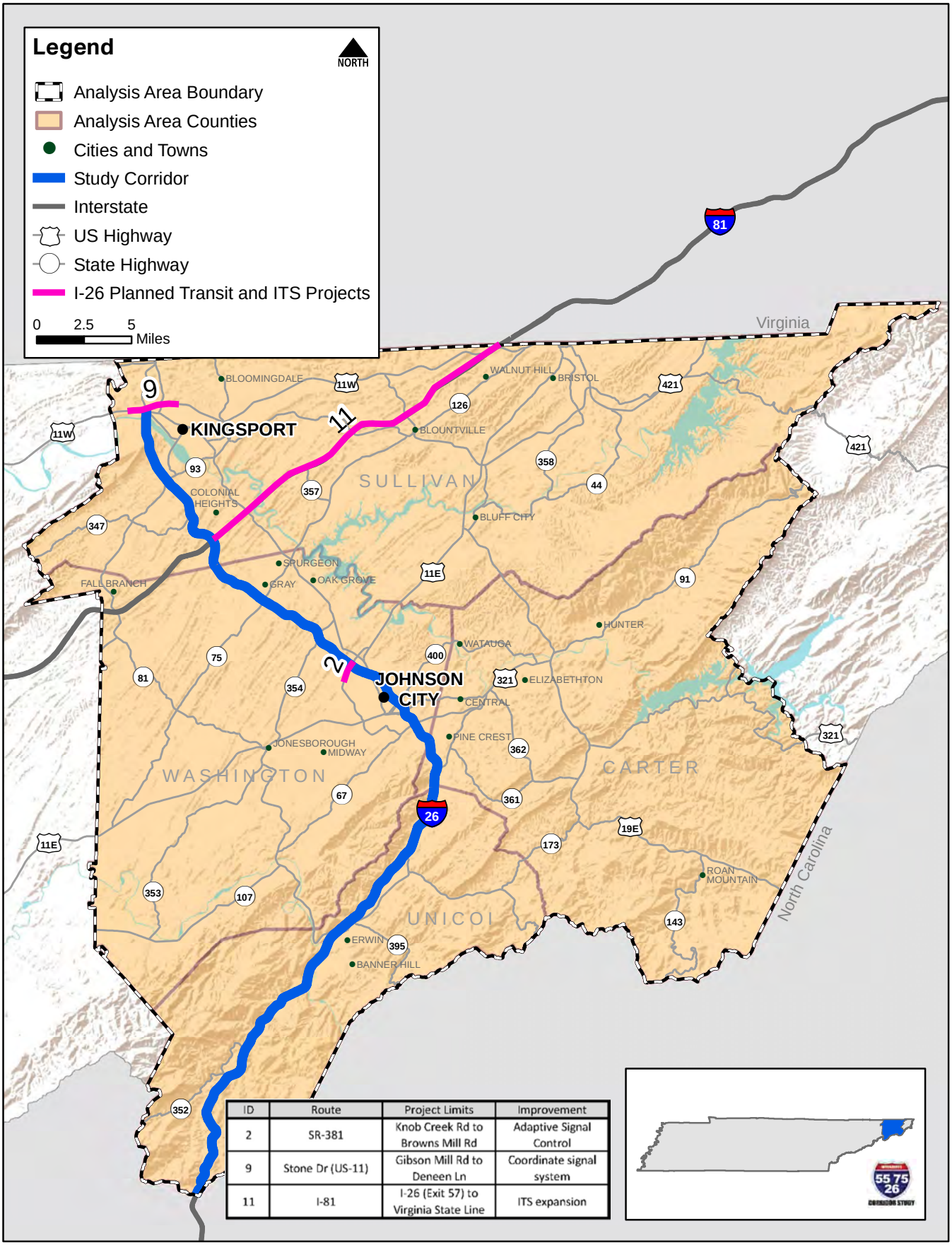


Figure 4-6. I-26 Planned Transit and ITS Projects



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The following sources were referenced in the development of Technical Memorandum 1. Sources for specific data points are listed in the footnotes in the various chapters.

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